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ABSTRACT

The program planning guide for agricultural supplies and services was written to assist Applied Biological and Agricultural Occupations (ABAO) teachers in enriching existing programs and/or to provide the basis for expansion of offerings to include additional materials for the cluster areas of agricultural chemicals, feeds, seeds, fertilizers, and science mechanics. Each guide includes the following components: an introduction (brief discussion of the subject matter); sample job titles and cluster areas (major job titles, D.O.T. numbers, O.E. numbers, and information about salaries, educational requirements, and career advancement opportunities); competencies for cluster areas and for job titles, stated as behavioral objectives; a core course outline (a representative sample of how a curriculum should be constructed, including references); sample teaching plans designed for one to five days in length (comprising cluster areas, unit titles, problem areas, a brief introduction, student performance objectives, a detailed outline of instructional content, learning activities, special materials and equipment, and student references). Also included are: specific and selected references; a brief description of school facilities; lists of equipment, supplies, and audiovisual materials; and a partial list of ways to increase teacher competencies. (BP)

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Volume II

PROGRAM PLANNING GUIDE IN AGRICULTURAL SUPPLIES AND SERVICES

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Development of Teachers' Guide and Students' Instructional Materials for Seven Selected Applied Biological and Agricultural Occupation Related Areas (PCB-A5-031)

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INTRODUCTION

The Program Planning Guides were written to assist the Applied Biological and Agricultural Occupations teacher in enriching the existing programs and/or to provide the basis for expansion of offerings to include an additional agricultural cluster area. For example, the current offering may be Agricultural Production with Agricultural Mechanics, and Agricultural Supplies and Services is to be added to the offering.

These guides are the result of a funded project coordinated by the Professional and Curriculum Development Unit, Division of Vocational and Technical Education, Board of Vocational Education and Rehabilitation in cooperation with the Agricultural Industries Department, Southern Illinois University, Carbondale, during the FY 1975. The project was entitled "Development of Teachers' Guide and Student Instructional Materials for Seven Selected ABAO (Applied Biological and Agricultural Occupations) Related Areas." The seven ABAO areas selected include:

1. Agricultural Production - O.E. Code 01.0100
2. Agricultural Supplies and Services - O.E. Code 01.0200
3. Agricultural Mechanics - O.E. Code 01.0300

4. Agricultural Products - O.E. Code 01.0400

5. Ornamental Horticulture - O.E. Code 01.0500

6. Agricultural Resources - O.E. Code 01.0600

7. Forestry - O.E. Code 01.0700

Major division, cluster area, and job titles were written with O.E. numbers, and only an occasional reference to D.O.T. The O.E. code was selected in that teachers in Illinois classify all of their students under this system.

The provisions of the SIU/C-DVTE project provided an opportunity for participation from throughout the Illinois Applied Biological and Agricultural Occupations staff. Each member contributed in his unique way, and they represent each of the four institutions which train DVTE staff, V.A.S., and ABAO teachers in community colleges and high schools.

The projects activities were coordinated by a Steering Committee. All major decisions on content, format, job titles, and final draft approval were the responsibility of the steering committee. They spent considerable time and effort in reviewing these guides. The steering committee was composed of the following members:

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Each guide includes the following component parts.

Introduction Unique consideration for the subject matter area.

Sample Job Titles and Cluster Areas This includes information about salary, education requirements and career advancement opportunities. These job titles and cluster areas are coordinated with a brochure entitled "Applied Biological and Agricultural Occupations Career Directory" published by the Division of Vocational and Technical Education, 1035 Outer Park Drive, Springfield, IL.

Competencies for Cluster Areas and Competencies for Job Titles The competencies, stated in measurable terms, are presented by cluster areas and job titles.

Core Course Outline The core course outline is a representative sample of how a curriculum could be constructed to present the program.

Exemplary Teaching Plans This is a section which incorporates teaching plans for selected units in the outline. Their function is to provide sample plans which the ABAO teacher may follow in developing his respective units.

Reference The references are coded into the teaching plan and listed with their source in the reference section.

School Facilities, Equipment, and Supplies This provides the ABAO teacher with a source for major items which will be required to operate the program.

Audio Visual Materials This is a listing of currently available visual materials for use in teaching the respective subject matter areas.

Teachers Competencies and Training Available This is a brief review of sources where the teacher could secure additional skills to assist in delivering a quality program.

These Program Planning Guides were prepared to improve the quality and increase the scope of Applied Biological and Agricultural Occupations offerings available in Illinois. The Guides can only be successful with your review, adaption, adoption, and implementation.

INTRODUCTION TO AGRICULTURAL SUPPLIES AND SERVICES

Vocational education in agriculture is changing. Fewer students each year are returning to the farm; more students are entering fields of related agricultural occupations. This vast agricultural industry (agribusiness) is seeking students with knowledge, skills, and ambition to fill the many positions being created.

The true scope of agricultural occupations can be appreciated only when all of its related segments are studied and understood. Teachers of agricultural occupations are faced with the problem of developing curricula that will prepare students for the related occupations in agriculture. This publication will provide the reader with information about occupations in agricultural supplies and services. It will also provide the agricultural occupations teacher with a planning guide designed to help prepare students for job entry into agricultural supplies and services occupations. Class instruction and on-the-job training are both essential in helping students become successful employees. This instruction will also provide them with a background for job advancement.

Agricultural supplies and services are important in the farmers' way of life. Farmers need chemicals, feeds, seeds, and fertilizer. People in agricultural supplies and services help to fill these needs. In this publication, agricultural

supplies and services is defined by the U.S. Office of Education as "the subject matter and learning experiences concerned with preparing pupils for occupations involved in providing consumable supplies used in the production phase of agriculture including processing, marketing, consulting, and other services." Various aspects of agricultural supplies are organized under the following descriptive titles:

Agricultural Chemicals

Feeds

Seeds

Fertilizers (Plant Food)

Other Agricultural Supplies and Services

No attempt was made to be original in all materials contained herein. Curriculum guides and instructional materials from Arizona, Iowa, Kentucky, Ohio, and Oklahoma were of great value in determining competencies and content included in this program planning guide. Teaching materials and other resources needed to supplement this planning guide are not readily found in agricultural occupations departments. For this reason, the teacher should contact industry for related instructional materials.

SAMPLE CLUSTER AREAS AND JOB TITLES

For the purpose of this program planning guide, five cluster areas are identified in agricultural supplies and services along with representative job titles in each area. The cluster areas and job titles identified are:

Agricultural Chemicals

- Chemical Applicator
- Warehouseman

Agricultural Feeds

- Feed Mill Helper

Agricultural Seeds

- Sales Clerk (Counter)
- Salesman (Route)

Agricultural Fertilizers

- Deliveryman

Agricultural Supplies and Services, Other

- Service Mechanics (Maintenance)

Many of the job titles listed above may be found under one or more of the cluster areas. It has been left up to the instructor to cross reference any job title needed under another cluster area.

SAMPLE JOB DESCRIPTIONS

MAJOR JOB TITLE:	Applicator
D.O.T. NUMBER:	424.883
O.E. NUMBER:	01.0201
LOCATION:	This job would be available in urban and rural areas. Chemical applicators are needed principally in farming areas, but may also find employment in urban areas.
SALARY:	A beginning hourly wage for a high school graduate would range from $2.25 to $3.00 per hour.
EDUCATION:	A high school graduate would be desirable. Training beyond high school would no doubt be encouraged by the employer. Workshops and short courses on chemicals and fertilizers should be included in any post-employment training. High school agricultural occupations courses in the use and application of fertilizers and chemicals would be helpful. On-the-job training would also be encouraged.
CAREER ADVANCEMENT:	Applicator Custom work Airplane Applicator Supervisor

MAJOR JOB TITLE:	Warehouseman
D.O.T. NUMBER:	922.887
O.E. NUMBER:	01.0203
LOCATION:	Employment would be found in agricultural supply stores; feed, fertilizer, chemical and feed stores; grain elevators; and processing plants.
SALARY:	A beginning hourly wage for a high school graduate would range from $2.25 to $3.00 per hour.

EDUCATION:	Employers generally prefer to hire high school graduates for warehousing positions. On-the-job training would be useful.
CAREER ADVANCEMENT:	Warehouseman Supervisor or Foreman Purchasing Agent Assistant Manager Manager
MAJOR JOB TITLE:	Feedmill Helper
D.O.T. NUMBER:	520.886
O.E. NUMBER:	01.0202
LOCATION:	Employment would be found in agricultural supply, fertilizer, chemical, and feed stores.
SALARY:	A beginning hourly wage for a high school graduate would range from $2.25 to $3.00 per hour.
EDUCATION:	Employers generally prefer to hire high school graduates for helper positions.
CAREER ADVANCEMENT:	Feedmill Helper Feed Mixer Custom Feedmill Operator Assistant Manager Manager
MAJOR JOB TITLE:	Sales Clerk (Counter)
D.O.T. NUMBER:	277.358
O.E. NUMBER:	01.0201
LOCATION:	Employment would be found in agricultural supply stores specializing in the sale of feed, fertilizer, chemicals, and seeds.
SALARY:	Beginning salary would range from $6,750 to $8,350 a year.
EDUCATION:	Employers generally prefer to hire high school graduates for sales jobs. High school agricultural occupations courses

in sales and service, business courses, and on-the-job training would be helpful.

CAREER ADVANCEMENT: Sales Clerk
Department Head
Assistant Manager
Manager

MAJOR JOB TITLE: Salesman (Route)

D.O.T. NUMBER: 266.258

O.E. NUMBER: 01.0201

LOCATION: Job opportunities are open in both urban and rural areas. The nature of the job will take the employee door-to-door and farm-to-farm selling chemical products.

SALARY: Beginning salary would range from $5,000 to $8,000 a year.

EDUCATION: High school graduates would be preferred. A working knowledge and prior experience in using the product would be helpful. Training in public speaking and working with the public would also be desirable.

CAREER ADVANCEMENT: Salesman
District Salesman
Supervisor
Head of Advertising

MAJOR JOB TITLE: Deliveryman

D.O.T. NUMBER: 906.883

O.E. NUMBER: 01.0202

LOCATION: Employment as a deliveryman would be available in urban and rural areas. Agricultural supply stores need deliverymen for many tasks.

SALARY: A beginning hourly wage for a high school graduate would range from $2.25 to $3.00 per hour.

EDUCATION: A high school graduate would be preferred, but not essential.

CAREER ADVANCEMENT:	Deliveryman Truck Driver (heavy) Custom work Warehouseman Supervisor
MAJOR JOB TITLE:	Service Mechanic
D.O.T. NUMBER:	638.281
O.E. NUMBER:	01.0204
LOCATION:	Employment would be found in fertilizer plants and farm service centers. Agricultural supply stores selling equipment and merchandise that may need repairs would offer excellent job opportunities for a service mechanic.
SALARY:	A beginning hourly wage for a high school graduate would range from $3.00 to $4.00 per hour.
EDUCATION:	On-the-job training and/or a high school graduate is preferred. An employee should be willing to attend a training school. Many companies send mechanics to school for additional training. High school courses in agricultural mechanics would be helpful.
CAREER ADVANCEMENT:	Service Mechanic Service Foreman

II. Agricultural Supplies and Services

A. Agricultural Chemicals

1. Safety

EE a. After class study and discussion, the student will be able to list the safety laws and regulations pertaining to the delivery of liquid petroleum to the satisfaction of the instructor.

EE b. After class study and discussion, the student will be able to list the safety laws and regulations pertaining to the storage of liquid petroleum to the satisfaction of the instructor.

EE c. After class study and discussion, the student will be able to list safety procedures to be followed in chemical use and application to the satisfaction of the instructor.

EE d. When provided empty chemical containers, the student will be able to dispose of those containers, according to the directions on the chemical label.

EE e. Using accident report forms, provided by a custom spraying service, the student will be able to correctly complete such forms to the satisfaction of the instructor.

EE f. After class study and discussion, the student will be able to list safety laws and regulations pertaining to storage rooms and warehouses to the satisfaction of the instructor.

EE g. After class study and discussion, the student will be able to identify unsafe

KEY: EE-ESSENTIAL for ENTRY
DA-DESIRABLE for ADVANCEMENT

practices in chemical handling equipment to the satisfaction of the instructor.

2. Product knowledge

EE a. Given an agricultural chemical product, the student will be able to explain the importance of product knowledge to the satisfaction of the instructor.

DA b. After class study and discussion, the student will be able to identify the various types of pests in the area and damage caused by each to the satisfaction of the instructor.

DA c. After class study and discussion, the student will be able to explain a step-by-step procedure for checking a house for pest control to the satisfaction of the instructor.

DA d. Provided with specimens of common weeds found in the local area and slide films from the Vocational Agriculture Service, the student will be able to identify the weeds at a level of performance acceptable to the instructor.

DA e. Given a chemical compatibility chart or as determined by a chemical label, the student will be able to determine what materials may be mixed together to the satisfaction of the instructor.

EE f. After class study and discussion, the student should be able to list the physical forms in which chemicals are available to the instructor's satisfaction.

EE g. When provided with a chemical label, the student will be able to correctly interpret all information contained on the label.

3. Business procedures and records

DA a. When given a problem to calculate a quantity of chemical needed for a given acreage, the student will be able to determine the amount needed to the satisfaction of the instructor.

DA b. Given a specific field area, the student will be able to calculate the amount of chemical needed to the satisfaction of the instructor.

EE c. Given a purchase order form and receiving records used by an agricultural chemical firm, the student will correctly write up a purchase order for inventory items and will complete the receiving record.

EE d. On a written exam, the student will be able to solve storage problems on area and volume with 80 per cent accuracy.

EE e. On a written exam, the student will be able to demonstrate mastery of addition, subtraction, multiplication, and division using arithmetic skills in decimals, fractions, and percentages with 80 per cent accuracy.

EE f. After class study and discussion, the student will be able to illustrate the importance of keeping an organized filing system to the satisfaction of the instructor.

EE g. After class study and discussion, the student will be able to identify different types of filing systems to the satisfaction of the instructor.

EE h. After class study and discussion, the student will be able to prepare guidelines for developing a filing system, to the satisfaction of the instructor.

EE i. Given the proper forms, the student will be able to fill out and interpret an invoice to the satisfaction of the instructor.

EE j. Using the appropriate receiving records, the student will be able to correctly write up the receiving records from a problem provided by the instructor.

EE k. After class study and discussion, the student will be able to explain the importance of inventory control and what happens to a business when merchandise is over or understocked, to the satisfaction of the instructor.

EE l. After class study and discussion, the student will be able to define and/or explain these methods of controlling inventory: systematic purchase, checking inventory, counting inventory, warehousing, inventory turnover, and inventory cost to the satisfaction of the instructor.

EE m. After class study and discussion, the student will be able to take a physical count inventory to the satisfaction of the instructor.

EE n. Given a sample problem from the instructor, the student will correctly fill out inventory forms used by agricultural supply and service firms.

EE o. After class study and discussion, the student will be able to identify the procedures for stocking inventory on a shelf to the satisfaction of the instructor.

EE p. Using the appropriate purchase order forms, the student will be able to correctly write up the purchase order for inventory items from a problem provided by the instructor.

EE q. Given the proper forms, the student will be able to correctly fill out a bill of lading.

4. Salesmanship

EE a. Given an agricultural chemical product to sell, the student will demonstrate in front of a class how to meet prospective customers and conduct a sales presentation to the satisfaction of the instructor.

EE b. When presented with an agricultural chemical to sell, the student will advertise items for sale in a manner acceptable to the instructor.

EE c. When presented with an agricultural chemical to sell, the student will display the item for sale in a manner acceptable to the instructor.

5. Storage

EE a. Using the instructor as a customer, the student will be able to explain the

correct methods of storage of agricultural chemicals

DA b. After class study and discussion, the student will be able to select from a list those stock items which should be avoided because they may compete with one another for customer sales, to the satisfaction of the instructor.

EE c. Given a simulated storage area, the student will be able to explain how to follow rodent control to the satisfaction of the instructor.

6. Handling and use

EE a. When given chemical application equipment, the student will be able to calibrate the equipment by following approved practices in the operator's manual.

EE b. Using the instructor as a customer, the student will be able to explain the correct methods of handling and safe use of agricultural chemicals.

EE c. Following a demonstration by a chemical applicator, the student will be able to replicate the cleaning and flushing of the tank, hoses, and nozzles and maintenance of the sprayer to the satisfaction of the instructor.

EE d. Given a portable spray apparatus, the student will be able to demonstrate correct use according to operator's manual.

EE e. When given a chemical sprayer truck, the student will be able to demonstrate how to operate the equipment according to instructions from the owner or driver.

DA f. After class study and discussion, the student will be able to list his responsibilities involved in recommending chemical use to the satisfaction of the instructor.

B. Agricultural Feeds

1. Safety

EE a. Given a specific storage area, the student

will be able to detect and correct housekeeping practices that could cause fires to the satisfaction of the instructor.

EE b. Given fire fighting equipment, the student will demonstrate correctly how to use it.

EE c. After class study and discussion, the student will be able to list safety laws and regulations pertaining to storage rooms and warehouses to the satisfaction of the instructor.

EE d. Given a simulated job area, the student will be able to list safety precautions to be practiced to the satisfaction of the instructor.

2. Product knowledge

EE a. After class study and discussion, the student will be able to explain the importance of the fuel industry to the satisfaction of the instructor.

EE b. Given a written request for a feed mixture, the student will be able to determine the proper ingredients and weigh the correct amount to be used.

EE c. When presented with a feed tag, the student will be able to correctly interpret the information.

3. Business procedures and records

EE a. Given appropriate pick-up and/or delivery forms used by a local feed mill, the student will be able to accurately complete the form(s) following instructions given.

EE b. When given a sales ticket, the student will be able to figure grinding, shelling, delivery, and labor charges using common rates in a farm supply business to the satisfaction of the instructor.

4. Salesmanship

See salesmanship competencies developed for the cluster area on agricultural seeds.

5. Storage

EE a. Given a simulated storage area, the student will be able to list step-by-step procedures on how to prepare the area for storage of feeds to the satisfaction of the instructor.

EE b. After class study and discussion, the student will be able to correctly sample stored grain for moisture content.

EE c. After class study and discussion, the student will be able to fumigate grain to the satisfaction of the instructor.

EE d. When presented with a quantity of feed to be analyzed, the student will be able to draw a representative sample for analysis to the satisfaction of the instructor.

EE e. After class discussion and study, the student will be able to identify five types of grain damage with 80 per cent accuracy.

DA f. After on-the-job experience, the student will be able to demonstrate how to bin grain according to quality and condition correctly.

6. Handling and use

EE a. After class study and discussion, the student will be able to describe the common practices and methods used in the handling of feed grains to the satisfaction of the teacher.

DA b. Given a feed mixer, the student will be able to operate the mixer to the satisfaction of the instructor.

DA c. Given a feed mixer, the student will be able to sack feed from the mixer to the satisfaction of the instructor.

EE d. Given a sack of feed and piece of twine the student will be able to tie a miller's knot in ten seconds.

EE e. Given sacks of feed, the student will be able to unload and load the sacks either manually or with a conveyor belt as directed by the instructor.

EE f. Given a clean-up assignment, the student will be able to follow instructions in cleaning up the mill to the satisfaction of the instructor.

DA g. When provided with a truck scale, the student will be able to correctly weigh amounts of ingredients according to specific quantities determined by the instructor.

DA h. When operating a fork lift, the student will be able to demonstrate how to operate the lift by safely moving supplies from place to place according to the instructor's directions.

C. Agricultural Seeds

1. Safety

EE a. After class study and discussion, the student will be able to list safety equipment and procedures needed by customers as prescribed by Occupational Safety and Health Act regulations to the satisfaction of the instructor.

2. Product knowledge

EE a. After class study and discussion, the student will be able to demonstrate his ability to identify the crop seeds available from the Vocational Agriculture Service with 90 per cent accuracy.

EE b. When presented with a seed tag, the student will be able to correctly interpret the information.

DA c. After class study, the student will be able to keep a current file of insect and disease control recommendations to the satisfaction of the instructor.

3. Business procedures and records

EE a. When given a problem to calculate a quantity of seed needed for a given acreage, the student will be able to correctly determine the amount needed.

EE b. On a written exam, the student will be able to demonstrate mastery of addition,

subtraction, multiplication, and division using arithmetic skills in decimals, fractions, and percentages with 80 per cent accuracy.

EE c. Given an amount of money, the student will be able to make correct change from assigned problems.

EE d. Given a cash register, the student will be able to identify 80 per cent of those parts requiring knowledge of a beginning student.

EE e. Given a cash register, the student will be able to replace the printing mechanism tape in less than one minute.

EE f. Given a cash register, the student will be able to illustrate a money arrangement system to the satisfaction of the instructor.

EE g. Given a cash register, the student will be able to ring up a sale in 20 seconds.

EE h. Given different check-out situations, the student will be able to explain the procedures for handling money and checks to the satisfaction of the instructor.

EE i. Using a ten-key adding machine, the student will be able to work problems using the touch method with speed and accuracy as determined by the instructor.

EE j. Using a portable electronic calculator, the student will be able to work problems using the touch method with speed and accuracy as determined by the instructor.

EE k. Given a sales ticket, the student will be able to explain the proper methods of filling out a sales ticket to the satisfaction of the instructor.

EE l. Given a sales ticket and a problem, the student will be able to correctly fill out the forms including price of item and state sales tax.

EE m. Given a sales ticket, the student will be able to illustrate common mistakes made when preparing sales tickets for customers to the satisfaction of the instructor.

EE n. On a written exam, the student will be able to calculate cash, tonnage, and early season discounts with 80 per cent accuracy.

EE o. Given an Illinois sales tax chart, the student will be able to determine the proper amount of tax with 100 per cent accuracy.

EE p. Given a problem on parts, the student will be able to locate and record the correct price for the item to the satisfaction of the instructor.

EE q. Using a designated schedule for product percentage mark-up on cost and provided with a given cost, the student will correctly establish the selling price for the product.

DA r. Upon completion of a sequence of lessons, the student will be able to explain the practices used in handling accounts receivable to the satisfaction of the instructor.

DA s. Upon completion of a sequence of lessons, the student will be able to describe accounts receivable collection procedures to the satisfaction of the instructor.

EE t. After a demonstration by the instructor on using a telephone, the student will be able to accept, record, and follow-up telephone orders correctly.

DA u. After class study and discussion, the student will be able to explain how to make a credit analysis to determine customer ability to repay to the satisfaction of the instructor.

DA v. After class study and discussion, the student will be able to explain the fundamentals of customer credit to the satisfaction of the instructor.

4. Salesmanship

EE a. After class study and discussion, the student will be able to list five ways of locating prospective customers and explain how to carry out each method to the satisfaction of the instructor.

EE b. Given a person's name, a plat map of the county, and the directions to follow, the student will be able to locate a point of delivery to the satisfaction of the instructor.

EE c. After class study and discussion, the student will be able to plan a system for making return visits to customers to the satisfaction of the instructor.

EE d. After class study and discussion, the student will be able to identify methods of making customer appointments to the satisfaction of the instructor.

EE e. After class study and discussion, the student will be able to demonstrate the human relation skills needed to greet a customer to the satisfaction of the instructor.

EE f. After class study and discussion, the student will be able to demonstrate to the satisfaction of the instructor how to introduce himself to the customer.

EE g. Upon completion of a sequence of lessons in salesmanship, the student will be able to identify human salesmanship techniques to the satisfaction of the instructor.

EE h. After class study and discussion, the student will be able to recognize customer buying signals and attitudes to the satisfaction of the instructor.

EE i. Upon completion of a sequence of lessons in salesmanship, the student will be able to assess what a salesman should know about company and competitive products to the satisfaction of the instructor.

EE j. While involved in a role playing situation, the student will handle the objections and/or complaints of a customer to the satisfaction of the instructor.

EE k. After class discussion and study, the student will be able to appraise the different sale closing techniques to the satisfaction of the instructor.

EE l. After an initial sale has been made to a customer, the student will be able to demonstrate the sale of related items to the instructor's satisfaction.

EE m. After class study and discussion, the student will be able to demonstrate acceptable personal appearance and hygiene.

DA n. Given a calendar, the student will be able to develop a monthly sales promotion activity calendar based on promotional days or seasonal activities to the satisfaction of the instructor.

EE o. When participating in a FFA public speaking contest in the chapter, the student will demonstrate his ability to prepare and present a public speech to the satisfaction of the instructor.

EE p. Given an item to sell, the student will write an advertisement suitable for publication in the news media.

DA q. Given an item to sell for an agricultural supply store, the student will prepare a radio script suitable to be aired.

5. Storage

EE a. Given a simulated storage area, the student will be able to list step-by-step procedures on how to prepare the area for storage of seeds to the satisfaction of the instructor.

6. Handling and use

See handling and use competencies developed for the cluster area on agricultural feeds.

D. Agricultural Fertilizers

1. Safety

EE a. Upon completion of a driver education course, the student will be able to demonstrate the driving skills learned to the satisfaction of the instructor.

DA b. After class study and discussion, the student will be able to pass the test

and obtain a chauffeur's license upon reaching age requirements.

2. Product knowledge

DA a. When given a problem to calculate a quantity of fertilizer needed for a given acreage, the student will be able to determine the correct amount.

DA b. Given a specific problem concerning timing (i.e., season, stage of crop growth, soil condition, etc.) of application of fertilizer, the student will be able to assist in determining when to apply these materials for maximum efficiency.

EE c. When presented with a fertilizer tag, the student will be able to correctly interpret the information.

3. Business procedures and records

EE a. Given a person's name, a plat map of the county, and the directions to follow, the student will be able to locate a point of delivery to the satisfaction of the instructor.

EE b. Given appropriate pick-up and/or delivery forms used by an agriculture supply store, the student will be able to accurately complete the form(s) following instructions given.

4. Salesmanship

See salesmanship competencies developed for the cluster area on agricultural seeds.

5. Storage

EE a. After class study and discussion, the student will be able to discuss the different methods of storing commercial fertilizers to the satisfaction of the instructor.

EE b. Given a simulated storage area, the student will be able to list step-by-step procedures on how to prepare the area for storage of fertilizers to the satisfaction of the instructor.

6. Handling and use

EE a. On a written exam the student will be able

to list the different methods of handling commercial fertilizer to the satisfaction of the instructor.

DA b. When provided appropriate information regarding fertilizer and/or lime materials to be applied, the student will be able to assist in determining how to apply the materials at a level of proficiency acceptable to the instructor.

EE c. With use of a bulk delivery truck, the student will be able to demonstrate how to load the truck to the satisfaction of the instructor.

EE d. Following a demonstration on the use of a bulk delivery truck, the student will be able to explain how to unload at the point of delivery to the satisfaction of the instructor.

II. Agricultural Supplies and Services

A. Agricultural Chemicals

Applicator

1. Safety

EE a. After class study and discussion, the student will be able to list safety procedures to be followed in chemical use and application to the satisfaction of the instructor.

EE b. When provided empty chemical containers, the student will be able to dispose of those containers, according to the directions on the chemical label.

EE c. Using accident report forms provided by a custom spraying service, the student will be able to correctly complete such forms to the satisfaction of the instructor.

2. Product knowledge

DA a. After class study and discussion, the student will be able to identify the various types of pests in the area and damage caused by each to the satisfaction of the instructor.

DA b. After class study and discussion, the student will be able to explain a step-by-step procedure for checking a house for pest control to the satisfaction of the instructor.

DA c. Provided with specimens of common weeds found in the local area and slide films from the Vocational Agriculture Service, the student will be able to identify the weeds at a level of performance acceptable to the instructor.

KEY: EE-ESSENTIAL for ENTRY
DA-DESIRABLE for ADVANCEMENT

DA d. Given a chemical compatibility chart or as determined by a chemical label, the student will be able to determine what materials may be mixed together to the satisfaction of the instructor.

EE e. After class study and discussion, the student should be able to list the physical forms in which chemicals are available to the instructor's satisfaction.

EE f. When provided with a chemical label, the student will be able to correctly interpret all information contained on the label to the satisfaction of the instructor.

EE g. When presented with a fertilizer tag, the student will be able to correctly interpret the information.

DA h. Given a specific problem concerning timing (i.e., season, stage of crop growth, soil condition, etc.) of application of fertilizer and chemicals, the student will be able to assist in determining when to apply these materials for maximum efficiency.

DA i. Given a problem on V-belts and pulleys, the student will be able to determine belt sizes, pulley sizes, and the number of belts needed to the satisfaction of the instructor.

EE j. After class study and discussion, the student will be able to list minor vehicle problems which may be encountered on the road to the satisfaciton of the instructor.

3. Business procedures and records

EE a. On a written exam, the student will be able to demonstrate mastery of addition, subtraction, multiplication, and division using arithmetic skills in decimals, fractions, and percentages with 80 per cent accuracy.

DA b. Given a specific field area, the student will be able to calculate the correct amount of chemical needed.

DA c. When using chemical labels, spray compatibility charts, and technical references from a chemical, the student will be able to calculate the correct amount of carrier and chemical to be mixed for a given situation.

DA d. When provided appropriate information regarding fertilizer and/or lime materials to be applied, the student will be able to assist in determining how to apply the materials at a level of proficiency acceptable to the instructor.

DA e. When provided with a truck scale, the student will be able to correctly weigh amounts of ingredients according to specific quantities determined by the instructor.

EE f. Given an amount of money, the student will be able to make correct change from assigned problems.

EE g. On a written exam, the student will be able to calculate cash, tonnage, and early season discounts with 80 per cent accuracy.

EE h. Given problem information, the student will be able to correctly fill out a purchase order.

EE i. Given a sales ticket, the student will be able to explain the proper methods of filling out a sales ticket to the satisfaction of the instructor.

EE j. Given sales information by the instructor, the student will be able to fill out a sales ticket in a period of time specified by the instructor.

EE k. Given a sales ticket, the student will be able to illustrate common mistakes made when preparing sales tickets for customers to the satisfaction of the instructor.

EE l. Given an Illinois sales tax chart, the students will be able to determine the proper amount of tax with 100 per cent accuracy.

4. Salesmanship

EE a. After class study and discussion, the student will be able to demonstrate the human relation skills needed to greet a customer to the satisfaction of the instructor.

5. Storage

EE a. Using the instructor as a customer, the student will be able to explain the correct methods of handling, storage, and safe use of agricultural chemicals.

6. Handling and use

EE a. When given chemical application equipment, the student will be able to calibrate the equipment by following approved practices in the operator's manual.

EE b. Following a demonstration by a chemical applicator, the student will be able to replicate the cleaning and flushing of the tank, hoses, and nozzles and maintenance of the sprayer to the satisfaction of the instructor.

EE c. Given a portable spray apparatus, the student will be able to demonstrate correct use.

DA d. When given a chemical sprayer truck, the student will be able to demonstrate how to operate the equipment according to instructions from the owner or driver.

DA e. After class study and discussion, the student will be able to list his responsibilities involved in recommending chemical use to the satisfaction of the instructor.

EE f. Upon completion of a driver education course, the student will be able to demonstrate the driving skills learned to the satisfaction of the instructor.

EE g. With the use of a bulk delivery truck, the student will be able to demonstrate how to load the truck to the satisfaction of the instructor.

Warehouseman

1. Safety

EE a. After class study and discussion, the student will be able to list the safety laws and regulations pertaining to the storage of liquid petroleum to the satisfaction of the instructor.

EE b. After class study and discussion, the student will be able to list safety laws and regulations pertaining to storage rooms and warehouses to the satisfaction of the instructor.

EE c. When provided empty chemical containers, the student will be able to dispose of those containers according to the directions on the label.

2. Product knowledge

EE a. Given a simulated storage area, the student will be able to explain how to follow rodent control to the satisfaction of the instructor.

DA b. Given a chemical compatibility chart or as determined by a chemical label, the student will be able to determine what materials may be mixed together to the satisfaction of the instructor.

EE c. After class study and discussion, the student will be able to demonstrate his ability to identify the crop seeds available from the Vocational Agriculture Service with 90 per cent accuracy.

EE d. When provided with a chemical label, the student will be able to correctly interpret all information contained on the label to the satisfaction of the instructor.

EE e. When presented with a tag (feed, seed, fertilizer), the student will be able to correctly interpret the information.

3. Business procedures and records

EE a. On a written exam, the student will be able to demonstrate mastery of addition,

subtraction, multiplication, and division using arithmetic skills in decimals, fractions and percentages with 80 per cent accuracy.

EE b. On a written exam, the student will be able to solve storage problems on area and volume with 80 per cent accuracy.

DA c. When given a problem to calculate a quantity of seed, chemical, or fertilizer needed for a given acreage, the student will be able to correctly determine the amount needed.

EE d. Given a sales ticket and a problem, the student will be able to correctly fill out the forms including price of item and state sales tax.

EE e. Given a problem on parts, the student will be able to locate and record the correct price for the item to the satisfaction of the instructor.

EE f. Given a problem and a mark-up table the student will be able to establish the selling price for a given amount of products to the satisfaction of the instructor.

EE g. After class study and discussion, the student will be able to illustrate the importance of keeping an organized filing system to the satisfaction of the instructor.

EE h. After class study and discussion, the student will be able to identify different types of filing systems to the satisfaction of the instructor.

EE i. After class study and discussion, the student will be able to prepare guidelines for developing a filing system to the satisfaction of the instructor.

EE j. Given the proper forms, the student will be able to fill out and interpret an invoice to the satisfaction of the instructor.

EE k. Using the appropriate receiving records, the student will be able to correctly

write the receiving records from a problem provided by the instructor.

EE l. After class study and discussion, the student will be able to identify the procedures for stocking inventory on a shelf to the satisfaction of the instructor.

EE m. After class study and discussion, the student will be able to explain the importance of inventory control and what happens to a business when merchandise is over or understocked to the satisfaction of the instructor.

EE n. After class study and discussion, the student will be able to define and/or explain these methods of controlling inventory: systematic purchase, checking inventory, counting inventory, warehousing, inventory turnover, and inventory cost to the satisfaction of the instructor.

EE o. After class study and discussion, the student will be able to take a physical count inventory to the satisfaction of the instructor.

EE p. Given a sample problem from the instructor, the student will correctly fill out inventory forms used by agricultural supply and service firms.

EE q. Given a parts manual and a simulated problem, the student will be able to correctly write an order form.

EE r. Using a portable electronic calculator, the student will be able to work problems using the touch method with speed and accuracy as determined by the instructor.

EE s. Using the appropriate purchase order forms, the student will be able to correctly write up the purchase order for inventory items from a problem provided by the instructor.

4. Salesmanship

EE a. After class study and discussion, the student will be able to demonstrate the human relation skills needed to greet a customer to the satisfaction of the instructor.

5. Storage

EE a. After class study and discussion, the student will be able to explain the different methods of handling and storing commercial fertilizers to the satisfaction of the instructor.

DA b. After class study and discussion, the student will be able to select from a list those stock items which should be avoided because they may compete with one another for customer sales to the satisfaction of the instructor.

EE c. After class study and discussion, the student will be able to correctly sample stored grain for moisture content.

EE d. Given a simulated storage area, the student will be able to list step-by-step procedures on how to prepare the area for storage of feeds, fertilizers, or seeds to the satisfaction of the instructor.

EE e. Given a clean-up assignment, the student will be able to follow instructions in cleaning up the mill to the satisfaction of the instructor.

EE f. Given a portable spray apparatus, the student will be able to demonstrate correct use.

EE g. After class study and discussion, the student will be able to fumigate grain to the satisfaction of the instructor.

6. Handling and use

EE a. After class study and discussion, the student will be able to describe the common practices and methods used in the handling of feed grains to the satisfaction of the instructor.

EE b. With the use of a bulk delivery truck, the student will be able to demonstrate how to load the truck to the satisfaction of the instructor.

EE c. Given sacks of feed, the student will be able to unload and load the sacks either

manually or with a conveyor belt as directed by the instructor.

DA d. When operating a fork lift, the student will be able to demonstrate how to operate the lift by safely moving supplies from place to place according to the instructor's directions.

DA e. When provided with a truck scale, the student will be able to correctly weigh amounts of ingredients according to specific quantities determined by the instructor.

B. Agricultural Feeds

Feed Mill Helper

1. Safety

EE a. After class study and discussion, the student will be able to list safety laws and regulations pertaining to storage rooms and warehouses to the satisfaction of the instructor.

EE b. When provided with an empty chemical container, the student will be able to dispose of the container according to the directions on the label.

EE c. Given a specific storage area, the student will be able to detect and correct housekeeping practices that could cause fires to the satisfaction of the instructor.

EE d. Given fire fighting equipment, the student will demonstrate correctly how to use it.

EE e. Given a simulated job area, the student will be able to list safety precautions to be practiced to the satisfaction of the instructor.

2. Product knowledge

EE a. Given a written request for a feed mixture, the student will be able to determine the proper ingredients and weigh the correct amount to be used.

DA b. After class study and discussion, the

student will be able to identify the various types of pests in the area and damage caused by each to the satisfaction of the instructor.

EE c. After class study and discussion, the student will be able to demonstrate his ability to identify the crop seeds available from the Vocational Agriculture Service with 90 per cent accuracy.

DA d. Provided with specimens of common weeds found in the local area and slide films from the Vocational Agriculture Service, the student will be able to identify the weeds at a level of performance acceptable to the instructor.

EE e. When presented with a tag (feed, fertilizer, seed), the student will be able to correctly interpret the information.

EE f. When provided with a chemical label, the student will be able to correctly interpret all information contained on the label to the satisfaction of the instructor.

EE g. After class study and discussion, the student should be able to list the physical forms in which chemicals are available to the instructor's satisfaction.

DA h. Given a problem on V-belts and pulleys, the student will be able to determine belt sizes, pulley sizes, and the number of belts needed to the satisfaction of the instructor.

EE i. When presented with a quantity of feed or seed to be analyzed, the student will be able to draw a representative sample for analysis to the satisfaction of the instructor.

3. Business procedures and records

EE a. On a written exam, the student will be able to demonstrate mastery of addition, subtraction, multiplication, and division using arithmetic skills in decimals, fractions, and percentages with 80 per cent accuracy.

EE b. On a written exam, the student will be able to solve storage problems on area and volume with 80 per cent accuracy.

DA c. When given a problem to calculate a quantity of seed, chemical, or fertilizer needed for a given acreage, the student will be able to determine the amount needed to the satisfaction of the instructor.

EE d. Given a sales ticket, the student will be able to explain the proper methods of filling out a sales ticket to the satisfaction of the instructor.

EE e. Given a sales ticket, the student will be able to illustrate common mistakes made when preparing customer sales tickets to the satisfaction of the instructor.

EE f. Given sales information by the instructor, the student will be able to fill out a sales ticket in a given period of time specified by the instructor.

EE g. Given an Illinois sales tax chart, the student will be able to determine the proper amount of tax with 100 per cent accuracy.

EE h. After class study and discussion, the student will be able to identify the procedures for stocking inventory on a shelf to the satisfaction of the instructor.

EE i. Given appropriate pick-up and/or delivery forms used by a local feed mill, the student will be able to accurately complete the form(s) following instructions given.

EE j. Given a sample problem, the student will correctly fill out inventory forms used by agricultural supply and service firms.

4. Salesmanship

EE a. After class study and discussion, the student will be able to demonstrate the human relation skills needed to greet a customer to the satisfaction of the instructor.

5. Storage

EE a. Given a simulated storage area, the student will be able to explain how to follow rodent control to the satisfaction of the instructor.

EE b. Given a portable spray apparatus, the student will be able to demonstrate correct use.

EE c. Given a simulated storage area, the student will be able to list step-by-step procedures on how to prepare the area for storage of feeds, fertilizers, or seeds to the satisfaction of the instructor.

EE d. Given a clean-up assignment, the student will be able to follow instructions in cleaning up the mill to the satisfaction of the instructor.

DA e. When operating a fork lift, the student will be able to demonstrate how to operate the lift by safely moving supplies from place to place according to the instructor's directions.

EE f. After class study and discussion, the student will be able to fumigate grain according to manufacturer's specifications.

EE g. After class study and discussion, the student will be able to correctly sample stored grain for moisture content.

6. Handling and use

EE a. After class study and discussion, the student will be able to describe the common practices and methods used in the handling of feed grains to the satisfaction of the teacher.

EE b. On a written exam, the student will be able to list the different methods of handling commercial fertilizer to the satisfaction of the instructor.

DA c. Given a feed mixer, the student will be able to operate the mixer to the satisfaction of the instructor.

DA d. Given a feed mixer, the student will be able to sack feed from the mixer to the satisfaction of the instructor.

EE e. Given a sack of feed and piece of twine the student will be able to tie a miller's knot in ten seconds.

DA f. When provided with a truck scale, the student will be able to correctly weigh amounts of ingredients according to specific quantities determined by the instructor.

EE g. Given sacks of feed, the student will be able to unload and load the sacks either manually or with a conveyor belt as directed by instructor.

EE h. With use of a bulk delivery truck, the student will be able to demonstrate how to load the truck to the satisfaction of the instructor.

EE i. Following a demonstration on the use of a bulk delivery truck, the student will be able to explain how to unload the truck at the point of delivery to the satisfaction of the instructor.

7. Mechanical

EE a. Upon completion of a driver education course, the student will be able to demonstrate the driving skills learned to the satisfaction of the instructor.

EE b. Given a piece of equipment, the student will be able to assemble the equipment according to assembly specifications and the operator's manual to the satisfaction of the instructor.

EE c. Given a truck with a flat tire, the student will correctly be able to change the tire.

EE d. Given a pick-up truck, the student will be able to demonstrate how to change tires on the rims (exchange old for new) to the satisfaction of the instructor.

EE e. Given a pick-up truck, the student will

be able to perform minor lubrication and maintenance tasks to the satisfaction of the instructor.

EE f. Given a pick-up truck, the student will be able to demonstrate how to change the oil and oil filter to the satisfaction of the instructor and manufacturer's specifications.

C. Agricultural Seeds

Sales Clerk (Counter)

1. Safety

EE a. Given a simulated job area, the student will be able to list safety precautions to be practiced to the satisfaction of the instructor.

2. Product knowledge

EE a. Given an agricultural chemical product, the student will be able to explain the importance of product knowledge to the satisfaction of the instructor.

DA b. Given a chemical compatibility chart or as determined by a chemical label, the student will be able to determine what materials may be mixed together to the satisfaction of the instructor.

3. Business procedures and records

EE a. On a written exam, the student will be able to demonstrate mastery of addition, subtraction, multiplication, and division using arithmetic skills in decimals, fractions, and percentages with 80 per cent accuracy.

DA b. When given a problem to calculate a quantity of seed, chemical, or fertilizer needed for a given acreage, the student will be able to correctly determine the amount needed.

DA c. Given a specific field area, the student will be able to calculate the amount of chemical needed to the satisfaction of the instructor.

EE d. Given a specified amount of money, the student will be able to make change without error.

EE e. Given a cash register, the student will be able to illustrate a money arrangement system to the satisfaction of the instructor.

EE f. Given a cash register, the student will be able to identify 80 per cent of those parts requiring knowledge of a beginning student.

EE g. Given a cash register, the student will be able to ring up a sale in 20 seconds.

EE h. Given a cash register, the student will be able to replace the printing mechanism tape in less than one minute.

EE i. Given different check-out situations, the student will be able to explain the procedures for handling money and checks to the satisfaction of the instructor.

EE j. Given a sales ticket, the student will be able to explain the proper methods of filling out a sales ticket to the satisfaction of the instructor.

EE k. Given a sales ticket, the student will be able to illustrate common mistakes made when preparing sales tickets for customers to the satisfaction of the instructor.

EE l. Given sales information by the instructor, the student will be able to fill out a sales ticket in a given period of time.

EE m. On a written exam, the student will be able to calculate cash, tonnage, and early season discounts with 80 per cent accuracy.

EE n. Given an Illinois sales tax chart, the student will be able to determine the proper amount of tax with 100 per cent accuracy.

EE o. Using a designated schedule for product percentage mark-up on cost and provided with a given cost, the student will

correctly establish the selling price for the product.

DA p. Upon completion of a sequence of lessons, the student will be able to explain the practices in handling accounts receivable to the satisfaction of the instructor.

EE q. Given an invoice, the student will be able to interpret and complete the invoice to the satisfaction of the instructor.

EE r. Given the proper forms, the student will be able to fill out and interpret an invoice to the satisfaction of the instructor.

EE s. After class study and discussion, the student will be able to define and/or explain these methods of controlling inventory: systematic purchase, checking inventory, warehousing, inventory turnover, and inventory cost to the satisfaction of the instructor.

EE t. After class study and discussion, the student will be able to take a physical count inventory to the satisfaction of the instructor.

EE u. After class study and discussion, the student will be able to identify the procedures for stocking inventory on a shelf to the satisfaction of the instructor.

EE v. Given a purchase order form and receiving records used by an agricultural chemical firm, the student will correctly write up a purchase order for inventory items and complete the receiving records.

EE w. Using a ten-key adding machine, the student will be able to work problems using the touch method with speed and accuracy as determined by the instructor.

EE x. Using a portable electronic calculator, the student will be able to work problems using the touch method with speed and accuracy as determined by the instructor.

4. Salesmanship

EE a. Upon completion of a sequence of lessons

in salesmanship, the student will be able to identify human salesmanship techniques to the satisfaction of the instructor.

EE b. Given an agricultural chemical product to sell, the student will demonstrate in front of a class how to meet prospective customers and conduct a sales presentation to the satisfaction of the instructor.

EE c. After class study and discussion, the student will be able to recognize customer buying signals and attitudes to the satisfaction of the instructor.

EE d. While involved in a role playing situation, the student will handle the objections and/or complaints of a customer to the satisfaction of the instructor.

EE e. After class discussion and study, the student will be able to appraise the different sale closing techniques to the satisfaction of the instructor.

EE f. After an initial sale has been made to a customer, the student will be able to demonstrate the sale of related items to the teacher's satisfaction.

EE g. When presented with an agricultural chemical to sell, the student will advertise items for sale in a manner acceptable to the instructor.

EE h. When presented with an agricultural chemical to sell, the student will display the item for sale in a manner acceptable to the instructor.

5. Storage

EE a. Given a simulated storage area, the student will be able to list step-by-step procedures on how to prepare the area for storage of seeds to the satisfaction of the instructor.

6. Handling and use

Specific competencies for handling and use were not identified for this job title, however, the reader may refer to handling and storage competencies developed for the cluster area on agricultural feeds.

Salesman (Route)

1. Safety

EE a. Given a simulated job area, the student will be able to list safety precautions to be practiced, to the satisfaction of the instructor.

2. Product knowledge

EE a. Upon completion of a sequence of lessons in salesmanship, the student will be able to assess what a salesman should know about company and competitive products to the satisfaction of the instructor.

DA b. Provided with specimens of common weeds found in the local area and slidefilms from the Vocational Agriculture Service, the student will be able to identify the weeds at a level of performance acceptable to the instructor.

EE c. After class study and discussion, the student will be able to demonstrate his ability to identify the crop seeds available from the Vocational Agriculture Service with 90 per cent accuracy.

EE d. After class study and discussion, the student should be able to list the physical forms in which chemicals are available to the instructor's satisfaction.

DA e. Given a chemical compatibility chart or as determined by a chemical label, the student will be able to determine what materials may be mixed together to the satisfaction of the instructor.

EE f. When provided with a chemical label, the student will be able to correctly interpret all information contained on the label.

3. Business procedures and records

EE a. On a written exam, the student will be able to demonstrate mastery of addition, subtraction, multiplication, and division using arithmetic skills in decimals, fractions, and percentages with 80 per cent accuracy.

DA b. When given a problem to calculate a quantity of seed, chemical, or fertilizer needed for a given acreage, the student will be able to determine the correct amount needed.

EE c. Given a specified amount of money, the student will be able to make change without error.

EE d. Given a sales ticket, the student will be able to explain the proper methods of filling out a sales ticket to the satisfaction of the instructor.

EE e. Given a sales ticket, the student will be able to illustrate common mistakes made when preparing sales tickets for customers to the satisfaction of the instructor.

EE f. Given sales information by the instructor, the student will be able to fill out a sales ticket in a given period of time.

EE g. Upon completion of a sequence of lessons, the student will be able to calculate discounts such as early season, bulk delivery, and cash to the satisfaction of the instructor.

EE h. When given a sales ticket, the student will be able to figure grinding, shelling, delivery and labor charges, using common rates in a farm supply business to the satisfaction of the instructor.

EE i. Given the Illinois sales tax chart, the student will be able to determine the proper amount of tax with 100 per cent accuracy.

EE j. After class study and discussion, the student will be able to illustrate the importance of keeping an organized filing system to the satisfaction of the instructor.

EE k. After class study and discussion, the student will be able to identify different types of filing systems to the satisfaction of the instructor.

EE l. After class study and discussion, the student will be able to prepare guidelines

for developing a filing system, to the satisfaction of the teacher.

EE m. Given the proper forms, the student will be able to fill out and interpret an invoice to the satisfaction of the instructor.

EE n. Given the proper forms, the student will be able to complete a receiving record to the satisfaction of the instructor.

DA o. Upon completion of a sequence of lessons, the student will be able to describe accounts receivable collection procedures to the satisfaction of the instructor.

DA p. Upon completion of a sequence of lessons, the student will be able to explain the practices used in handling accounts receivable to the satisfaction of the instructor.

EE q. Given the proper forms, the student will be able to complete a purchase order to the satisfaction of the instructor.

EE r. Using a portable electronic calculator, the student will be able to work problems using the touch method with speed and accuracy as determined by the instructor.

4. Salesmanship

EE a. Upon completion of a sequence of lessons in salesmanship, the student will be able to identify human salesmanship techniques to the satisfaction of the instructor.

EE b. Given a person's name, a plat map of the county, and the directions to follow, the student will be able to locate a point of delivery to the satisfaction of the instructor.

EE c. After class study and discussion, the student will be able to list five ways of locating prospective customers and explain how to carry out each method to the satisfaction of the instructor.

EE d. After class study and discussion, the student will be able to identify methods of making customer appointments to the

satisfaction of the instructor.

EE e. After class study and discussion, the student will be able to demonstrate to the satisfaction of the instructor, how to introduce himself to a customer.

EE f. After class study and discussion, the student will be able to recognize customer buying signals and attitudes to the satisfaction of the instructor.

EE g. During a role-play situation, the student will be able to demonstrate the various methods of handling customer objections to the satisfaction of the instructor.

EE h. After an initial sale has been made to a customer, the student will be able to demonstrate the sale of related items to the satisfaction of the instructor.

EE i. After class discussion and study, the student will be able to appraise the different sale closing techniques to the satisfaction of the instructor.

EE j. After class study and discussion, the student will be able to plan a system for making return visits to customers to the satisfaction of the instructor.

EE k. When presented with an agricultural chemical to sell, the student will advertise items for sale in a manner acceptable to the instructor.

5. Storage

EE a. Given a simulated storage area, the student will be able to list step-by-step procedures on how to prepare the area for storage of seeds to the satisfaction of the instructor.

6. Handling and use

DA a. After class study and discussion, the student will be able to list responsibilities involved in recommending chemical use to the satisfaction of the instructor.

7. Mechanical

EE a. After class study and discussion, the student will be able to list minor vehicle problems which may be encountered on the road to the satisfaction of the instructor.

EE b. Given a truck with a flat tire, the student will correctly be able to change the tire.

D. Agricultural Fertilizers

Deliveryman

1. Safety

EE a. After class study and discussion, the student will be able to list the safety laws and regulations pertaining to the delivery of liquid petroleum to the satisfaction of the instructor.

EE b. Using accident report forms provided by a custom spraying service, the student will be able to correctly complete such forms to the satisfaction of the instructor.

2. Product knowledge

DA a. Provided with specimens of common weeds found in the local area and slide films from the Vocational Agriculture Service, the student will be able to identify the weeds at a level of performance acceptable to the instructor.

EE b. After class study and discussion, the student will be able to demonstrate ability to identify the crop seeds available from the Vocational Agriculture Service with 90 per cent accuracy.

EE c. After class study and discussion, the student should be able to list the physical forms in which chemicals are available to the instructor's satisfaction.

EE d. When presented with a tag (feed, fertilizer, seed), the student will be able to correctly interpret the information.

3. Business procedures and records

EE a. After class study and discussion, the students will be able to demonstrate mastery of addition, subtraction, multiplication, and division, using arithmetic skills in decimals, fractions, and percentages to the satisfaction of the instructor.

DA b. When given a problem to calculate a quantity of seed, chemical, or fertilizer needed for a given acreage, the student will be able to determine the correct amount needed.

DA c. Given a specific field size, the student will be able to calculate the correct amount of chemical needed.

EE d. Given a specified amount of money, the student will be able to make change without error.

EE e. Given a sales ticket, the student will be able to explain the proper methods of filling out a sales ticket to the satisfaction of the instructor.

EE f. Given a sales ticket, the student will be able to illustrate common mistakes made when preparing sales tickets for customers to the satisfaction of the instructor.

EE g. Given sales information by the instructor, the student will be able to fill out a sales ticket in a given period of time.

EE h. On a written exam, the student will be able to calculate cash, tonnage, and early season discounts with 80 per cent accuracy.

EE i. When given a sales ticket, the student will be able to figure grinding, shelling, delivery, and labor charges, using common rates in a farm supply business to the satisfaction of the instructor.

EE j. Given an Illinois sales tax chart, the student will be able to determine the proper amount of tax with 100 per cent accuracy.

EE k. Using the appropriate receiving records, the student will be able to correctly write up the receiving records from a problem provided by the instructor.

DA l. Upon completion of a sequence of lessons, the student will be able to explain the practices in handling accounts receivable to the satisfaction of the instructor.

DA m. Upon completion of a sequence of lessons, the student will be able to describe accounts receivable collection procedures to the satisfaction of the instructor.

EE n. Given a sample problem from the instructor, the student will correctly fill out inventory forms used by agricultural supply and service firms.

EE o. Using the appropriate purchase order forms, the student will be able to correctly write-up the purchase order for inventory items from a problem provided by the instructor.

EE p. Given appropriate pick-up and/or delivery forms used by a local feed mill, the student will be able to accurately complete the form(s) following instructions given.

4. Salesmanship

EE a. After class study and discussion, the student will be able to demonstrate the human relation skills needed to greet a customer to the satisfaction of the instructor.

EE b. Given a person's name, a plat map of the county, and the directions to follow, the student will be able to locate a point of delivery to the satisfaction of the instructor.

5. Storage

EE a. After class study and discussion, the student will be able to discuss the different methods of storing commercial fertilizers to the satisfaction of the instructor.

6. Handling and use

EE a. On a written exam, the student will be

able to list the different methods of handling commercial fertilizer to the satisfaction of the instructor.

EE b. Using the instructor as a customer, the student will be able to explain the correct methods of handling agricultural chemicals.

EE c. After class study and discussion, the student will be able to describe the common practices and methods used in the handling of feed grains to the satisfaction of the instructor.

EE d. Given sacks of feed, the student will be able to unload and load the sacks either manually or with a conveyor belt as directed by the instructor.

EE e. With the use of a bulk delivery truck, the student will be able to demonstrate how to load the truck to the satisfaction of the instructor.

EE f. Following a demonstration with the use of a bulk delivery truck, the student will be able to explain how to unload the truck at the point of delivery to the satisfaction of the instructor.

DA g. When provided with a truck scale, the student will be able to correctly weigh amounts of ingredients according to specific quantities determined by the instructor.

DA h. After class study and discussion, the student will be able to list his responsibilities involved in recommending chemical use to the satisfaction of the instructor.

7. Mechanical

EE a. Upon completion of a driver education course, the student will be able to demonstrate the driving skills learned to the satisfaction of the instructor.

DA b. After class study and discussion, the student will be able to pass the test and obtain a chauffeur's license upon reaching age requirements.

EE c. After class study and discussion, the student will be able to list minor vehicle problems which may be encountered on the road to the satisfaction of the instructor.

EE d. Given a truck with a flat tire, the student will correctly be able to change the tire.

EE e. Given a pick-up truck, the student will be able to perform minor lubrication and maintenance tasks to the satisfaction of the instructor.

EE f. Given a pick-up truck, the student will be able to demonstrate how to change the oil and oil filter to the satisfaction of the instructor and the manufacturer's specifications.

E. Agricultural Supply and Services, Other

Service Mechanic

1. Technical knowledge

EE a. After class study and discussion, the student will be able to list minor vehicle problems which may be encountered on the road to the satisfaction of the instructor.

EE b. In the school shop, the student will be able to identify the two basic types of small engines and explain the principles of operation for each to the satisfaction of the instructor.

EE c. Given a 3 1/2 horsepower gasoline engine, the student will be able to name the engine parts with 90 per cent accuracy.

EE d. Given a 3 1/2 horsepower gasoline engine, the student will be able to repair and replace worn parts to the satisfaction of the instructor.

DA e. Given a problem on V-belts and pulleys, the student will be able to determine belt sizes, and the number of belts needed to the satisfaction of the instructor.

2. Assembly (equipment)

EE a. Given a 3 1/2 horsepower gasoline engine,

the student will be able to assemble and start the engine according to the manufacturer's specifications.

EE b. Given a piece of equipment, the student will be able to assemble the equipment according to assembly specifications and operator's manual to the satisfaction of the instructor.

3. Business procedure and records

EE a. Given a parts manual, the student will be able to correctly write an order form from a problem provided by the instructor.

Additional competencies may be found in the Agricultural Mechanics Program Planning Guide.

4. Maintenance (vehicle)

EE a. Given a maintenance check list, the student will be able to identify the maintenance operations to be checked and specify the time intervals between checks to the satisfaction of the instructor and the manufacturer's specifications.

EE b. Given a truck with a flat tire, the student will correctly be able to change the tire.

EE c. Given a flat tire on a rim, the student will be able to make the necessary repairs so it will remain inflated.

EE d. Given a pick-up truck, the student will be able to demonstrate how to change tires on rims (exchange old for new) to the satisfaction of the instructor.

DA e. Given a dual axle truck, the student will be able to demonstrate how to change an inside tire on the axle to the satisfaction of the instructor.

EE f. Using methods which promote optimum gasoline engine efficiency, the student will be able to adjust the engine for speed and load to the satisfaction of the instructor.

EE g. Given a battery, the student will be able to demonstrate how to clean away all corrosive material.

EE h. Given a battery, the student will be able to check the battery for the correct amount of electrolyte.

EE i. Given a battery, the student will be able to explain how to check the battery for chargability and charge the battery correctly.

EE j. Given a pick-up truck, the student will be able to demonstrate how to change spark plugs and points and make other minor adjustments to the satisfaction of the instructor and manufacturer's specifications.

EE k. Given a vehicle with a radiator, the student will be able to check the level of fluid in the radiator correctly.

EE l. After class study and discussion, the student will be able to list the steps in checking the cooling system to the instructor's satisfaction.

EE m. Given a pick-up truck, the student will be able to deomonstrate how to change the oil and oil filter to the satisfaction of the instructor and the manufacturer's specifications.

EE n. Given a pick-up truck, the student will be able to perform minor lubrication and maintenance tasks to the satisfaction of the instructor.

CORE COURSE OUTLINE FOR AGRICULTURAL SUPPLIES AND SERVICES

Course Outline	Reference Code	Reference
II. Agricultural Supplies and Services		
A. Agricultural Chemicals		
1. Safety		
a. General	SR	V.A.S. Nitrates in Water Supplies, Field Crops, and Ruminant Nutrition (30)
	TR	Ohio State University "Agricultural Chemicals Sales and Service" (1)
	SR,TR	Ohio State University "Agricultural Chemicals" (7)
	SR	National Safety Council Respiratory Protection in Agriculture (12a)
b. Storage	SR	(30)
	TR	(1) "Agricultural Chemicals Sales and Service"
	TR	(1) "Petroleum and Petroleum Products"
c. Handling and use (Teaching plan available in this guide)	SR	(30)
	TR	(1) "Agricultural Chemicals Sales and Service"
	TR	(1) "Petroleum and Petroleum Products"
	SR	National Safety Council Safe Handling of Anhydrous Ammonia (12)
d. Disposal of containers	SR	(30)
	TR	(1) "Agricultural Chemicals Sales and Service"
e. Accidents	TR	(1) "Agricultural Chemicals Sales and Service"
	SR,TR	(7) "Agricultural Chemicals"
f. Chemical labels	SR	(30)
	TR	(1) "Agricultural Chemicals Sales and Service"
	SR,TR	(7) "Agricultural Chemicals"

KEY: TR-TEACHER REFERENCE
SR-STUDENT REFERENCE

Course Outline	Reference Code	Reference
2. Product knowledge		
a. Importance of chemicals	TR	(1) "Agricultural Chemicals Sales and Service"
b. Pest control	SR	The American Oil Company Farm Chemical Manual (2)
	TR	(1) "Agricultural Chemicals Sales and Service"
c. Insect and disease control	TR	(2)
d. Weed identification	SR	V.A.S. Slidefilm Identification of Weeds, Part 1 (1 av.)
	SR	V.A.S. Slidefilm Identification of Weeds, Part 2 (2 av.)
e. Chemical compatibility	TR	The American Oil Company Farming 75 Pesticides and Petroleum (3)
f. Understanding chemical labels (Teaching plan available in this guide)	SR	V.A.S. Handling and Using Agricultural Chemicals Safely (31)
	TR	(2)
3. Business procedures and records		
a. Basic mathematics		
b. Filing systems	SR	Price, Musselman, and Hall General Business for Everyday Living Ch. 13 (4)
	SR	DeBurn, Haines, Mulsbany, and Crabbe General Business for Economic Understanding p. 724 (5)
c. Warehousing Receipts	SR	V.A.S. Agricultural Credit Instruments (32)
	TR	(1) "Business Procedures"
	SR,TR	(7) "Business Procedures and Records"
d. Inventory control (Teaching plan available in this guide)	SR	V.A.S. Inventory Management and Control (33)
	SR	V.A.S. Agricultural Business Procedures (34)
	SR	(4) pp. 293-295
	TR	(1) "Business Procedures"
	SR,TR	(7) "Business Procedures and Records"

Course Outline	Reference Code	Reference
e. Stocking	TR	(1) "Business Procedures"
f. Purchase orders	SR	(34)
g. Bill of lading	SR	(4) pp. 280-293
	SR	(32)
4. Salesmanship		
a. Sales presentation		Refer to cluster area on Agricultural Seeds
b. Advertising	SR	V.A.S. Slidefilm Advertising Your Product (3 av.)
c. Displaying merchandise	SR,TR	(7) "Advertising and Promotion"
	SR	V.A.S. Slidefilm Displaying Merchandise (4 av.)
	TR	(1) "Business Procedures"
	SR	Weyant, Hoover, and McClay An Introduction to Agriculture Business and Industry pp. 224-226 (6)
5. Storage		
a. Stocking	TR	(1) "Business Procedures"
b. Rodent control	SR	Bureau of Sport Fisheries and Wildlife Fundamentals of Rodent Proofing, Facts about Rats and Mice, and Use of Single Dose Poisons (8)
6. Handling and use		
a. Sprayer calibration (Teaching plan available in this guide)	SR	The American Oil Company Pesticide Handbook (9)
	SR	Illinois Extension Service Calibrating and Maintaining Spray Equipment (11)
	TR	(1) "Agricultural Chemicals Sales and Service"
	SR	Virginia Extension Service Agricultural Chemicals - Herbicides (13)
b. Methods of handling and use of chemicals	SR,TR	(7) "Agricultural Chemicals"
c. Cleaning equipment	SR	(13)
d. Responsibilities involved in recommending chemical use	SR	Illinois Extension Service Legal Aspects of Crop Spraying (10)

Course Outline	Reference Code	Reference
	TR	(1) "Agricultural Chemicals Sales and Service"
e. Nozzle selection	SR	(2) (11) (13)
f. Application equipment	SR	(13)
B. Agricultural Feeds		
1. Safety		
a. General	TR	National Safety Council Farm and Ranch Safety Guide (14)
	TR	National Safety Council Personal Protective Equipment for Agriculture (15)
	TR	National Safety Council Hearing Protection in Agriculture (16)
b. Storage		
c. Fire fighting and prevention	TR	National Safety Council Fire Prevention on the Farm and Ranch (17)
2. Product knowledge		
a. Importance of feed industry	SR,TR	(7) "Feeds"
b. Weighing proper ingredients		
c. Feed tags (Teaching plan available in this guide)	SR,TR TR	(7) "Feeds" (1) "Feeds, Sales, and Service"
3. Business procedures and records		
a. Delivery forms	SR,TR	(7) "Business Procedures and Records"
b. Sales tickets (mill rates)	SR,TR	(7) "Business Procedures and Records"

Course Outline	Reference Code	Reference
4. Salesmanship		Refer to cluster area on Agricultural Seeds
5. Storage (on-job-training)		
a. Preparing storage area		
b. Taking moisture test	SR	Aldrich and Lang Modern Corn Production p. 276 (18)
c. Fumigating grain		
d. Drawing samples of grain for analysis	SR,TR	(7) "Feeds"
e. Grain damage		
f. Bin grain as to quality		
6. Handling and use (on-job-training)		
a. Operating mixer		
b. Sacking feed		
c. Tying sack		
d. Using conveyor belt		
e. Cleaning mill		
f. Weighing on truck scales		
g. Operating fork life	SR	Deere and Co. Fundamentals of Machinery Operation, Agricultural Machinery Safety p. 334 (19)
C. Agricultural Seeds		
1. Safety		
a. General		Refer to cluster area on Agricultural Feeds
2. Product knowledge		
a. Importance of quality seed	SR,TR SR	(7) "Selling and Salesmanship" (18) Ch. 3

Course Outline	Reference Code	Reference
b. Crop identification	SR	V.A.S. kit
c. Seed tag	SR	Scott Hybrid Seed Corn Labels in 1971 (20)
d. Insect and disease control	SR	(18)
	SR	Scott and Lang Modern Soybean Production (21)
e. Planting dates for seed	SR	Illinois Extension Service Illinois Agronomy Handbook (22)
f. Weights and measures	SR	Corwin Supervised Occupational Experience Manual Ch. 12 (23)
g. Chemical and biological treatment	TR	Illinois Extension Service Twenty-Sixth Illinois Custom Spray Operators Training School pp. 343-344 (24)
3. Business procedures and records	TR	(1) "Business Procedures"
a. Basic mathematics	SR,TR	(7) "Business Procedures and Records"
b. Making change	SR	(4) pp. 148-151
	SR,TR	(7) "Business Procedures and Records"
c. Cash register	SR	V.A.S. The Use of the Cash Register (35)
	SR	(4) pp. 158-163
	SR,TR	(7) "Business Procedures and Records"
d. Handling money and checks	SR	(4) pp. 163-166
	SR,TR	(7) "Business Procedures and Records"
e. Adding machines	SR	(4) pp. 221-225
f. Sales tickets	SR	(34)
	SR,TR	(7) "Business Procedures and Records"
g. Discounts	SR	(6) pp. 82-83
	SR,TR	(7) "Business Procedures and Records"
h. Sales tax	SR	(4) pp. 108-111
	SR	(5) Ch. 47
	SR,TR	(7) "Business Procedures and Records"
i. Product pricing	SR	(34)
	SR	(6) pp. 84-89
	SR,TR	(7) "Business Procedures and Records"

Course Outline	Reference Code	Reference
j. Accounts receivable	SR	V.A.S. Customer Credit Management in Agricultural Businesses (36)
	SR	(4) Ch. 26
k. Telephone use	SR,TR	(7) "Business Procedures and Records"
l. Credit analysis	SR,TR	(7) "Human Relations in Business"
	SR	(36)
	SR,TR	(7) "Business Money Management"
4. Salesmanship		
a. Locating and approaching customers	TR	(1) "Agricultural Salesmanship"
b. Human relation skills	SR,TR	(7) "Selling and Salesmanship"
	SR	V.A.S. Human Relations in Agricultural Business (37)
	SR	V.A.S. Slidefilm Human Relations in Agriculture Business (9 av.)
c. Finding customer need	SR,TR	(7) "Human Relations in Business"
	SR	V.A.S. Salesmanship in Agricultural Business (38)
d. Opening a sales interview (Teaching plan available in this guide)	SR,TR	(7) "Business Money Management"
	SR	(38)
	TR	(1) "Agricultural Salesmanship"
e. Handling customer objections	SR	(38)
	TR	(1) "Agricultural Salesmanship"
f. Substitute selling	SR,TR	(7) "Selling and Salesmanship"
g. Closing the sale	SR,TR	(7) "Selling and Salesmanship"
	SR	(38)
	TR	(1) "Agricultural Salesmanship"
h. Related items	SR,TR	(7) "Selling and Salesmanship"
i. Advertising and promotion	SR,TR	(7) "Selling and Salesmanship"
	SR	(3 av.)
j. Public speaking	SR,TR	(7) "Advertising and Promotion"
k. Displaying merchandise	SR	(37)
	SR	(4 av.)
	SR	(6)

Course Outline	Reference Code	Reference
1. Personal hygiene	SR,TR SR	(7) "Human Relations in Business" (37)
5. Storage		Refer to cluster area on Agricultural Feeds
6. Handling and use		Refer to cluster area on Agricultural Feeds
D. Agricultural Fertilizers		
1. Safety		
a. Driving skills b. Chauffeur's license	TR	(1) "Petroleum and Petroleum Products"
2. Product knowledge		
a. Importance of fertilizer	TR SR SR	(1) "Fertilizer Sales and Service" V.A.S. Planning a Fertilizer Program (39) (18) p. 261
b. Soil tests and lime needs	SR SR	V.A.S. Testing Soils for Phosphorus (40) V.A.S. Soil Liming a Key to Better Farming (41)
c. Fertilizer tags	TR SR	(1) "Fertilizer Sales and Service" (18)
d. Nutrient needs of soil	TR SR	(1) "Fertilizer Sales and Service" V.A.S. Nature of Soil Acidity and Major Plant Nutrients (42)
e. Physical forms	TR SR TR	(1) "Fertilizer Sales and Service" (18) (1) "Fertilizer Sales and Service"
3. Business procedures and records		
a. Locating customers b. Pick up and delivery forms		

Course Outline	Reference Code	Reference
4. Salesmanship		Refer to cluster area on Agricultural Seeds
5. Storage		
a. Methods b. Preparation of area	TR	(1) "Fertilizer Sales and Service"
6. Handling and use		
a. Methods	TR	(1) "Fertilizer Sales and Service"
b. Applicators (Teaching plan available in this guide)	SR TR SR SR	The American Oil Company Pesticide Handbook (25) (1) "Fertilizer Sales and Service" McVickor Using Commercial Fertilizer (26) National Plant Food Institute The Fertilizer Handbook (27)
c. Loading and unloading		
E. Agricultural Supply and Service, Other (Service Mechanic)		
1. Technical knowledge		
a. Small engines	SR	Briggs and Stratton Corporation Repair Instructions IV (29)
	SR	V.A.S. Small Engines--Principals of Operation, Trouble Shooting and Tune-Up (43)
b. Trouble shooting c. Belts and pulleys	SR	V.A.S. Small Engines--Repair and Overhauling (44)
2. Assembly		
a. Equipment		

Course Outline	Reference Code	Reference
3. Business procedures and records		
a. Parts manual		Refer to program planning guide for Agricultural Mechanics
4. Maintenance		
a. Regular	SR	Stockel Auto Service and Repair (28)
b. Tune	SR	(28) Ch. 30
	SR	V.A.S. Tires for Farm Equipment (45)
c. Fuel	SR	(28) Ch. 20
d. Battery (Teaching plan available in this guide)	SR	(28) Ch. 22
	SR	V.A.S. The Storage Battery (46)
e. Tune-up	SR	(28) Ch. 23
	SR	V.A.S. The Spark Plug in Operation, Selection, and Maintenance (47)
f. Cooling system	SR	(28) Ch. 19
	SR	V.A.S. The Engine Cooling System (48)
g. Lubrication	SR	(28) Ch. 17

II. Agricultural Supplies and Services

A. Agricultural Chemicals

UNIT: 1. Safety

PROBLEM AREA: c. Pesticides Handling and Use

TEACHING PLAN

I. INTRODUCTION: How safe are agricultural chemicals? This is a very important question and will become more important in the future. It may be said generally that agricultural chemicals in themselves are safe. It is when they are handled, stored, or used carelessly they become dangerous.

In spite of all the precautions taken, there are still many people injured and killed annually because of improper storage and mishandling of pesticides. Many of these chemicals, by the nature of their purpose, contain substances that are harmful to man, animals, and economic plants. It is the purpose of this unit to deal with some of the hazards involved in using agricultural chemicals and how these hazards can be minimized or eliminated.

II. STUDENT PERFORMANCE OBJECTIVES:

A. After class study and discussion, the student will be able to list four out of five types of chemicals.

B. On a written exam, the student will explain the uses of pesticides to the satisfaction of the instructor.

C. On a written exam, the student will be able to match safety words with their meanings with 90 per cent accuracy.

D. Given class study and discussion time, the student will be able to list the three classes of chemical hazards and four safety rules for each with 80 per cent accuracy.

E. Given class study and discussion time, the student will be able to list the three ways chemicals enter the body to the satisfaction of the instructor.

III. OUTLINE OF INSTRUCTIONAL CONTENT:

A. Types of chemicals
   1. Pesticide--any substance or mixture of substances used for:
      a. Preventing, destroying, repelling, or otherwise controlling insects affecting plants, animals, and humans (insecticides).
      b. Preventing, destroying, repelling, or otherwise controlling fungi (fungicides).
      c. Preventing, destroying, repelling, or otherwise controlling weeds (herbicides).
      d. Controlling rats, mice, or other rodents (rodenticides).
   2. Antibiotics--any chemical or chemicals produced by living organisms that help alleviate or control bacterial diseases.
   3. Plant regulators--any substance or mixture of substances that affect, through physiological action, growth rate, or other behavior of plants.
   4. Defoliants--any substance or mixture of substances used to cause leaves or foliage to drop from plants. Generally used to facilitate harvesting.
   5. Dessicants--any substance or mixture of substances used to artifically accelerate the drying of plant tissues (may or may not cause leaf drop).

B. Terms used in dealing with safety
   1. Toxicity--degree of poisonousness of a substance. Its capacity to produce injury once it reaches a susceptible site.
   2. Poison--substance, which if introduced into an organism in relatively small amounts, may chemically produce an injurious or deadly effect.
   3. Acute exposure--inhaling or absorbing of relatively large amounts of chemicals in a short period of time (seconds, minutes, hours).
   4. Chronic exposure--inhaling or absorbing relatively small amounts of chemicals over a long period of time (days, months, years).
   5. Local exposure--site of action of an agent or the exact area of contact.
   6. Absorption--takes place when material has gained entry into the bloodstream.
   7. Hazard--danger or probability that injury will result from the use of a substance in a given quantity and manner.
   8. Safety--the practical certainty that injury will not result from the use of a given substance.

C. Classes of toxic substances
   1. Dusts--solid particles generated by handling, crushing, grinding, etc.

2. Vapor--gaseous forms of substances that are normally a solid or liquid.
3. Mists--suspended liquid droplets.

D. Ways toxic chemicals enter body
1. Absorption through the skin
2. Swallowing or gastrointestinal absorption
3. Absorption by breathing

E. Three classes of chemical hazards (safety rules)
1. Hazards to person's safety
   a. Never smoke while using chemicals.
   b. Always wash hands and face after spraying or dusting.
   c. Change clothing immediately.
   d. Avoid contact with skin.
   e. Wear goggles, respirator, gloves, and long sleeve shirt.
   f. Avoid applying chemicals in high wind.
   g. Burn empty containers away from buildings and avoid breathing any smoke from fire.
   h. If illness occurs, consult a doctor immediately.
2. Hazards of use
   a. Do not permit an irresponsible employee or any careless person to handle, mix, or apply chemicals.
   b. Properly identify insect, weed, or pest to be controlled.
   c. Measure ingredients accurately and mix them thoroughly.
   d. Mix only what is needed for immediate use.
   e. Use chemicals only on the crops for which they are recommended.
   f. Be sure sprayer or applicator is in good condition and operating properly.
   g. Apply chemicals only at times recommended on the label.
   h. Guard against drift of sprays or dusts.
   i. Cover all food and water containers when treating an area around livestock.
   j. Consider wildlife as well as humans, domestic animals, and plants when applying agricultural chemicals.
3. Hazards of storage
   a. Always store chemicals in the original containers with the label attached and the lid closed tightly.
   b. Keep all chemicals out of reach of children and pets.
   c. Keep chemicals away from livestock feed.
   d. Never lend a portion of a chemical to another person in an unmarked or unlabeled container.
   e. Always dispose of containers immediately.

f. Chemicals in large containers, which are heavy to handle, should be stored on or near the floor to prevent falling.
g. All corrosive materials should be stored in safe containers.
h. Chemicals stored in glass bottles should not be stored near heat.
i. Be sure all labels are securely attached and protected.

IV. POSSIBLE STUDENT LEARNING ACTIVITIES:

A. Have students collect labels from chemicals and bring to class to discuss the safety precautions listed.

B. Have students write to the National Safety Council and ask for information on chemical safety.

C. Have students present a demonstration on equipment and how to handle chemicals safely.

D. Have a resource person talk to the class on chemical safety. Possibly a local chemical dealer.

V. SPECIAL MATERIALS AND EQUIPMENT:

A. Labels from chemical containers

B. Safety charts for chemicals

VI. STUDENT REFERENCES:

A. V.A.S. 4045 Handling and Using Agricultural Chemicals Safely.

B. The American Oil Company Farm Chemical Manual, p. 28. Chicago, Illinois; Marketing Department.

C. The American Oil Company Pesticide Handbook, p. 47. Chicago, Illinois, 1974.

D. Deere and Co. Fundamentals of Machinery Operation, Agricultural Machinery Safety, Ch. 7. Moline, Illinois: Deere and Co., 1974.

II. Agricultural Supplies and Services

A. Agricultural Chemicals

UNIT: 2. Product Knowledge - Chemicals

PROBLEM AREA: f. Understanding labels

TEACHING PLAN

I. INTRODUCTION: The first step in eliminating the hazards or dangers from agricultural chemicals is to read the label on the container and then follow directions carefully. Manufacturers of toxic agricultural chemicals are required by law to put certain information on the product label. This law is concerned with alerting users of the potential dangers in common articles stored and used in and around the farm and home. Laws can only do their job if the customer reads and heeds the information contained on labels.

II. STUDENT PERFORMANCE OBJECTIVES:

A. After examining a chemical label, the student will be able to list five of the seven items on the label.

B. After class study and discussion, the student will be able to list the four kinds of labeling regulations and the symbol for each correctly.

III. OUTLINE OF INSTRUCTIONAL CONTENT:

A. Information required by law.
1. Name of product
2. Name and address of manufacturer, distributor, or person for whom manufactured
3. A statement of net contents
4. Full and complete directions for use
5. A precautionary labeling adequate for safe use for the protection of the public
6. If product is highly toxic to man, poison must be printed in red along with a skull and crossbones
7. If poisonous, antidote must appear on label

B. Federal labeling regulations
1. Extremely hazardous - crossbones and skull, poison
2. Highly toxic - danger
3. Extremely flammable - danger
4. Products which can cause illness or injury - caution and warning

IV. POSSIBLE STUDENT LEARNING ACTIVITIES:

A. Bring labels of empty chemical containers to class for discussion.

B. Make a list of items at home, agricultural supply store, and grocery store which have a poison and skull and crossbone sign on them.

V. SPECIAL MATERIALS AND EQUIPMENT:

A. Labels from various chemicals

VI. STUDENT REFERENCE:

A. V.A.S. 4045 Handling and Using Agricultural Chemicals Safely.

II. Agricultural Supplies and Services

A. Agricultural Chemicals

UNIT: 3. Business Procedures and Records

PROBLEM AREA: d. Inventory Control

TEACHING PLAN

I. INTRODUCTION: Inventory management and control concerns most managers of agricultural marketing and supply businesses. Retail, wholesale, and service oriented businesses are affected. Agricultural business students should also be knowledgeable about this topic.

The value of a manager to an agricultural marketing and supply business depends on his ability to manage inventories effectively. The total cost of maintaining the desired inventory level must be held down to a reasonable figure, but the inventory must also be large enough to permit the company to effectively merchandise the products and services it sells. If the manager fails to control inventories to accomplish both of these objectives, the business may not be able to prosper or even to survive competition.

II. STUDENT PERFORMANCE OBJECTIVES:

A. Given the necessary information, the student will be able to complete inventory control sheets to the satisfaction of the instructor.

B. The student will be able to list the six inventory control practices and explain each with 80 per cent accuracy.

C. The student will be able to list five factors which effect inventory cost and give two examples of each with 80 per cent accuracy.

D. The student will be able to work problems with the economic order quantity formula with 70 per cent accuracy.

III. OUTLINE OF INSTRUCTIONAL CONTENT:

A. Inventory control practices
   1. Purchase systematically
      a. Proper placement of orders

b. Let inventory become low - but meet current needs
c. Don't hold "dead" lines or items

2. Keep track of inventories
   a. Keep when stock is received
   b. Add to inventory count
   c. Take frequent physical counts to:
      (1) Find items not selling
      (2) Spot theft shortages
      (3) Note deterioration
      (4) Decide when to rank
3. Use storage facilities efficiently
4. Be aware of inventory turnover
   a. Inventory turnover ratio = volume of sales ÷ by the level of inventory on a certain day
   b. Zero inventory is undesirable
   c. Large inventory for fast moving items
   d. Increase selling effort of slow moving products
5. Know the cost of inventories
6. Avoid computing products

B. Factors which effect inventory costs
   1. Storage space cost
      a. Taxes on land and building
      b. Insurance on building
      c. Depreciation on building and warehouses owned
      d. Rent (if paid)
      e. Materials for repair and maintenance on building
      f. Utilities
      g. Janitor, watchman, maintenance
   2. Handling costs
      a. Depreciation on equipment
      b. Fuel or electricity for equipment
      c. Maintenance and repair of equipment
      d. Insurance and taxes on equipment
   3. Rich costs on inventory
      a. Insurance on inventory
      b. Obsolescence of inventory
      c. Physical deterioration of inventory
      d. Pilferage
      e. Losses from inventory price declines
   4. Inventory service costs
      a. Taxes on inventory
      b. Labor costs of handling and maintaining stock
      c. Clerical costs for inventory records
      d. Contribution to Social Security by employer based on prorated employee time devoted to inventories
      e. Unemployment compensation insurance based on prorated time of "inventory involved" personnel
      f. Employer contribution to pension plans, group life, health, and accident insurance programs

based on prorated time of "inventory involved" personnel

g. An appropriate proportionate share for administrative overhead, including all taxes, Social Security, pension, and employer contributions to insurance programs for administrative personnel who are involved

5. Capital costs
   a. Interest on money invested on inventory
   b. Interest on money invested on inventory handling and control equipment
   c. Interest on money invested in land and buildings to store inventory

C. Economic Order Quantity formulation

1. $EOQ = \sqrt{\frac{2as}{i}}$

   a. a = ordering cost per order
   b. s = annual sales rate
   c. i = interest cost per unit per year

IV. POSSIBLE STUDENT LEARNING ACTIVITIES:

A. Using information given by instructor, complete an inventory sheet for a business.

B. Complete the Vocabulary Skill Booster on page 295 of An Introduction to Agriculture Business and Industry by Weyant, Hoover, and McClay.

C. Complete the Clerical Skill Booster from page 297 of An Introduction to Agriculture Business and Industry by Weyant, Hoover, and McClay.

D. Complete the Application Problem on page 298 of An Introduction to Agriculture Business and Industry by Weyant, Hoover, and McClay.

E. Have students go to a local store and observe the inventory-taking process.

F. Have a local manager talk to the class and explain inventory control.

V. SPECIAL MATERIALS AND EQUIPMENT:

A. A supply of inventory sheets

VI. STUDENT REFERENCES:

A. V.A.S. 6010 Inventory Management and Control.

B. Price, Musselman, and Hall General Business for Everyday Living. McGraw-Hill, Inc., 1972.

C. Weyant, Hoover, and McClay An Introduction to Agriculture Business and Industry. Danville, Illinois: Interstate Printers and Publishers, 1971.

II. Agricultural Supplies and Services

A. Agricultural Chemicals

UNIT: 6. Handling and Use

PROBLEM AREA: a. Sprayer Calibration

TEACHING PLAN

I. INTRODUCTION: Proper calibration is the key to successful pesticide use. Chemical application takes precision. Too much spray is wasteful (and may damage crops), while too little can result in poor weed or insect control. In most cases, labels give application rates per acre. For sprays, labels may also recommend a range of operating pressures and the amount of carrier (water or oil) to use per acre for best results. However, several other factors affect calibration including: (1) nozzle size and spacing; (2) operating pressure; and (3) rate of speed. Increasing either nozzle size or spray pressure, or both, increases application rates. Application rates are also increased if ground speed decreases while other factors remain the same. With so many variables, accurate calibration becomes a necessity.

II. STUDENT PERFORMANCE OBJECTIVES:

A. Given calibration problem information, the student will be able to work the problem using the appropriate formulas with 80 per cent accuracy.

B. Given a field sprayer, the student will be able to calibrate rising water instead of chemical to the satisfaction of the instructor.

III. OUTLINE OF INSTRUCTIONAL CONTENT:

A. Five steps to follow in calibrating sprayers
   1. Fill sprayer tank with water and adjust pressure, usually 30 pounds per square inch (psi)
   2. Spray 40 rods (660 feet or 1/8 mile) at a constant speed of four to five mph in field to be sprayed or, if that is impractical in a similar field (Dry lot calibration will give different results than on soft ground). Mark the throttle or rate tachometer reading so the same speed can be maintained later.

3. Refill the tank and measure the amount of water it takes to refill after spraying the 40 rods.
4. Calculate the amount of water applied per acre as follows:

   a. $\frac{\text{Number of gallons used 66}}{\text{Boom width in ft.}}$ = Gallons applied/acre

5. To calculate the amount of product to put in tank, divide tank capacity by gallons applied per acre to get the acres one tank will cover. Multiply this by amount of product to be applied per acre.
6. Find out how many acres the sprayer tank will cover (step 5 above) and use this formula:
   a. Number of acres covered x

$$\frac{\text{Pounds of chemical active ingredient required per acre}}{\text{Pounds of active ingredient per gallon of liquid product or per cent active ingredient in a wettable or soluble powder}} = \text{Gallons or pounds to be used in the sprayer tank}$$

   b. Converting spray ration from broadcast to band

$$\frac{\text{Width of band (inches)}}{\text{Row spacing (inches)}} \times \text{Broadcast rate in gallons per acre} = \text{Gallons of spray per acre for band}$$

   c. Key points in band application
      (1) Mixture proportions in sprayer tank are the same as for broadcast
      (2) Less pesticide is needed because you're "zeroing in" to spray a smaller area around the plant
      (3) Despite lower per acre rates, banded pesticide dose per square foot is the same as the broadcast dose per square foot

IV. POSSIBLE STUDENT LEARNING ACTIVITIES:

A. Have a commercial applicator come to class to demonstrate his procedures.

V. SPECIAL MATERIALS AND EQUIPMENT:

A. A field sprayer

VI. STUDENT REFERENCES:

A. The American Oil Company Pesticide Handbook, p. 47. Chicago, Illinois, 1974.

II. Agricultural Supplies and Services

B. Agricultural Feeds

UNIT: 2. Product Knowledge

PROBLEM AREA: c. Feed Tags

TEACHING PLAN

I. INTRODUCTION: Regulation of the sale of ingredients and formula feeds began prior to 1900. This time corresponded with the beginning of the feed industry. These restrictions, which vary somewhat from state to state, were imposed by every state except Nevada which does not regulate the sale of feedstuff. The feed industry is promoting a uniform federal feed law.

II. STUDENT PERFORMANCE OBJECTIVES:

A. On a written exam, the student will be able to list four of the five regulations to be listed on medicated feed.

B. On a written exam, the student will be able to list in order the nine items indicated on a feed label.

C. On a written exam, the student will be able to list three state law requirements in Illinois that apply to labels.

III. OUTLINE OF INSTRUCTIONAL CONTENT:

A. Federal regulations deal with:
1. The additives that can be added to feeds
2. The level of additives in the feed
3. How the medicated feed is to be fed
4. Proper handling of medicated feeds

B. Regulations for medicated feed to be indicated on label:
1. Purpose of the medication
2. Directions for use of the feed
3. The common names and amounts of all active drug ingredients
4. A warning statement of a withdrawal period, when required, for a particular drug in the feed
5. Warnings against misuse

Example: Stilbestrol for beef cattle
Purpose: fattening beef cattle
Directions: 10 milligrams per head per day
Required warning statement: Discontinue use of this feed 48 hours before slaughter. Do not feed to breeding or dairy animals.

C. Labels for feed should contain, in order:

1. Net weight
2. Brand or trade name
3. Product name
4. Purpose of medication
5. Active drug ingredients, by common names, expressed in percentages or grams
6. Guaranteed analysis of feed
7. Feed ingredients expressed by their common names
8. Name and address of manufacturer
9. Detailed feeding directions
   a. Purpose
   b. When to feed
   c. How to feed
   d. Precautions
   e. Warning statement

D. State law requirements on feed
1. Licensing or registration of each brand of feed
2. Labeling regulations
   a. Net weight of the package
   b. Name, brand, or trademark
   c. Name and address of manufacturer distributor
   d. Minimum per cent of crude protein
   e. Minimum per cent of crude fat
   f. Minimum per cent of crude fiber
   g. Names of ingredients
3. Penalties for violation

IV. POSSIBLE STUDENT LEARNING ACTIVITIES:

A. Obtain copies of feed regulations for the state and review them with the class. Copies can be obtained from the Illinois Department of Agriculture.

B. Have students collect labels from feeds and identify those things that are common to all labels.

C. Review the labels to determine which ones contain information required by the Food Additives Amendment.

D. Have the student learn to differentiate between the terms name and brand of a feed.

V. SPECIAL MATERIALS AND EQUIPMENT:

A. Wide assortment of feed labels

VI. STUDENT REFERENCES:

A. Copies of the state feed laws

II. Agricultural Supplies and Services

C. Agricultural Seeds

UNIT: 4. Salesmanship

PROBLEM AREA: d. Opening a Sales Interview

TEACHING PLAN

I. INTRODUCTION: Think about the last time a salesman approached you and by the end of the conversation you had made a purchase. This may have been in your home, at school, or at a place of business. Did the sale just happen to take place or was it carefully planned? Chances are the salesman did some careful planning somewhere along the line. Possibly not just for his approach to you as an individual but at least for his approach regarding this kind of situation. Normally, successfully closed sales do not just happen; they have been carefully planned.

II. STUDENT PERFORMANCE OBJECTIVES:

A. After class study and discussion, the student will be able to list three of the four steps involved in preparing for a sales interview.

B. After class study and discussion, the student will be able to correctly list in order the steps in the need-satisfaction approach.

C. After class study and discussion, the student will list the four key words used in the persuasion of potential customers and explain how they are used to the satisfaction of the instructor.

D. On a written exam, the student will list four of the six additional techniques to keep in mind for a sales interview.

III. OUTLINE OF INSTRUCTIONAL CONTENT:

A. Preparing for the sales interview
   1. Accumulate knowledge of prospect's operation
   2. Accumulate knowledge of prospect's personality characteristics
   3. Coordinate information about the farmer
   4. Plan the approach you will use in providing information about the product

B. Need-satisfaction approach
   1. Find prospect
   2. Get him dissatisfied with results
   3. Show him how your product can help him
   4. Create in him a desire for new satisfaction
   5. The prospect takes action and buys the product
   6. He obtains the new satisfaction

C. Four key words regarding the persuasion of potential customers
   1. Attention--you get attention
   2. Interest--he becomes interested in product
   3. Desire--develops a desire for benefits
   4. Action--takes action by buying product

D. Additional techniques to keep in mind
   1. Answer all of the prospect's questions
   2. Maintain control of the interview without it being obvious
   3. Look for negative or positive reactions
      a. Negative
         (1) Shift approach
         (2) Ask a question
      b. Positive
         (1) If he keeps agreeing, close the sale
         (2) Always use his statements to build up your product
   4. Listening is extremely important
   5. Don't be afraid to let the farmer know you are there to sell
   6. If he is too busy, make appointment to return

IV. POSSIBLE STUDENT LEARNING ACTIVITIES:

A. Have student give examples of good and poor sales methods he has observed.

B. Estimate the percentage of all workers in the U.S. who owe their employment, at least in part, to contributions of salesmen.

C. Make a list of items commonly sold in a farm supply center in a locality. Indicate for each item the motive which would dominate in causing a customer to purchase the item.

D. Using a role play situation, have one student play the farmer and another the salesman to practice a sales interview.

E. A written exam to cover unit.

V. SPECIAL MATERIALS AND EQUIPMENT:

A. Tape recorder

VI. STUDENT REFERENCES:

A. V.A.S. 6002 Salesmanship and Agricultural Business.

II. Agricultural Supplies and Services

D. Agricultural Fertilizers

UNIT: 6. Handling and Use

PROBLEM AREA: b. Fertilizer Application Equipment

TEACHING PLAN

I. INTRODUCTION: Much existing fertilizer equipment is outdated or is so poorly maintained that maximum results from fertilizers cannot be obtained. Fertilizer application equipment must: (1) provide even distribution; and (2) place the fertilizer properly.

It is not enough to simply apply the desired amount of fertilizer per acre; the desired amount must also be put on each plant and in the right place. Only then will the fertilizer be able to provide best results.

II. STUDENT PERFORMANCE OBJECTIVES:

A. On a written exam, the student will be able to list three of the four reasons why there is a wide variety of application equipment.

B. On a written exam, the student will be able to identify five of the six types of fertilizer applicators.

C. After class study and discussion, the student will be able to explain how to advise a customer on factors to consider when buying an applicator to the satisfaction of the instructor.

D. On a written exam, the student will be able to correctly list what should be done before and after use of the applicator each year.

III. OUTLINE OF INSTRUCTIONAL CONTENT:

A. Reasons for existence of a wide variety of application equipment
   1. Types of fertilizer materials used
   2. Varying rates of application needed
   3. Varying placements desired
   4. Areas to be fertilized

B. Types of equipment
   1. Hand-operated machines, both with and without wheels

2. Broadcastors
   a. Full width trailers
   b. Trucks, trailers, tractors, and wagons
      (1) Rotary fans
      (2) Full width hoppers
      (3) Auger spreader tubes
3. Row distributors and drills
4. Machines with fertilizer attachments
   a. Drills
   b. Planters
   c. Tillage equipment
5. Liquid and gaseous fertilizer equipment
   a. Anhydrous ammonia
   b. Low pressure solution
   c. Non-pressure solutions
   d. Foliar sprays
6. Airborne fertilizer equipment

C. Factors to consider when buying
   1. Flexible in operation to meet the requirements of most fertilizer application
   2. Easy to fill and should carry a large load
   3. Should apply large and small amounts accurately and be easily adjusted
   4. Should correctly place the fertilizer
   5. Should be of sturdy construction, easy to maintain, and resist corrosion
   6. Should be easy to empty and clean

D. Before use the first time each year
   1. Remove the coating of grease with a solvent
   2. Check to see that all moving parts are moving freely
   3. Check all operating adjustments
   4. Lubricate the implement thoroughly

E. After use each year
   1. Store in a clean, dry shed
   2. Thoroughly clean, including washing, before storage
   3. Coat with grease on all moving parts
   4. Completely inspect and condition

IV. POSSIBLE STUDENT LEARNING ACTIVITIES:

A. Determine with the students the types of fertilizer applicators used in the area. Discuss the characteristics of each type and the reasons for the varying types.

B. Arrange a visit to a farm machinery dealership to become acquainted with the various types of applicators available. Have the dealer explain the advantages and disadvantages of each.

C. Bring the common types of applicators into the school shop and provide students with the experience in making needed repairs and adjustments.

V. SPECIAL MATERIALS AND EQUIPMENT:

A. Wall charts, pictures, and colored slides of various types of applicators

B. Applicators for shop instruction

C. Operators' manuals for fertilizer applicators

VI. STUDENT REFERENCES:

A. National Plant Food Institute The Fertilizer Handbook. Washington, D.C.: National Plant Food Institute, 1970, page 101.

B. McVickor, M.H. Using Commercial Fertilizer, Second Edition. Danville, Illinois: The Interstate Printers and Publishers, 1961.

II. Agricultural Supplies and Services

E. Agricultural Supplies and Services, Other

UNIT: 4. Maintenance

PROBLEM AREA: d. Battery Maintenance

TEACHING PLAN

I. INTRODUCTION: The battery plays a key role in the overall functioning of the electrical system. To insure reliability and to extend the useful service life, the battery should receive periodic inspection and maintenance.

II. STUDENT PERFORMANCE OBJECTIVES:

A. Given a car with a battery, the student will be able to remove the battery from the car and check and clean it correctly.

B. Given a battery, the student will demonstrate the safety rules to be followed in handling a battery to the satisfaction of the instructor.

C. Given a battery, the student will be able to demonstrate how to use the hydrometer with 80 per cent accuracy.

D. Given a battery, the student will be able to demonstrate how to fast, slow, and trickle charge a battery correctly.

III. OUTLINE OF INSTRUCTIONAL CONTENT:

A. Safety
1. When handling battery electrolyte, wear goggles and rubber gloves.
2. Pour the acid into water to make electrolyte mixture. Do not pour water into acid.
3. Never strike a spark, light a match, or bring open flames near a battery.
4. Use a properly fitted lift strap to move batteries.
5. When a battery is removed from a car, it should be placed where it will not be knocked over, dropped, or exposed to sparks or flame.
6. Store the battery acid or dry-change battery electrolyte where the containers will be safe from breakage.

B. Battery maintenance
   1. Battery visual check
      a. Corrosion
      b. Cracking
      c. Leakage
      d. Hold down
      e. Terminals
      f. Cables
      g. Electrolyte level
   2. Corrosion is removed by
      a. Brushing off excess corrosion
      b. Brushing on baking soda and water
      c. Rinsing off with clean water
      d. Removing terminals and cleaning, drying, greasing and replacing
   3. Battery hold-down should be snug
   4. Check electrolyte level
   5. Use distilled water

C. Check specific gravity with hydrometer
   1. Never add water before checking specific gravity
   2. If battery was just changed, crank the engine for several seconds
   3. Hold the hydrometer in a vertical position and draw in sufficient electrolyte to suspend the float
   4. Squirt the electrolyte out and repeat several times
   5. The float should not touch either the bottom or top of the float barrel
   6. Allow gas bubbles to rise and sediment to settle before reading
   7. Hold the hydrometer at eye level and note the scale reading at the exact point the float scale emerges from the electrolyte
   8. The reading must be temperature corrected

D. Temperature corrected float reading
   1. Note temperature of the electrolyte by reading the thermometer built into the hydrometer
   2. Add .004 to each 10 degrees F. above 80 degrees F.
   3. Subtract .004 for each 10 degrees F. below 80 degrees F.

E. When to charge
   1. When hydrometer reading indicates less that 75 per cent charged, (1.215-1.230)

F. Battery charging
   1. Slow charging--small amount of current through the battery for a fairly long period (5-7 amps) (14-16 hours)

2. Fast charging--heavy initial current through the battery that will impact a fairly good charge in a short time (50-60 amps) (1-2 hours)
3. Trickle charging--low current often less than one ampere for long period of time

IV. POSSIBLE STUDENT LEARNING ACTIVITIES:

A. Students should be given a demonstration by the instructor on battery cleaning and checking.

B. The student should clean a battery following a step-by-step procedure.

C. The student should charge three batteries as a class assignment; one slow, one fast, one trickle.

D. The student could check five batteries with a hydrometer and adjust for temperature.

V. SPECIAL MATERIALS AND EQUIPMENT:

A. Brushes

B. Electrolyte solution

C. Hydrometer

D. Batteries

E. Battery charger with slow, fast, and trickle charge

VI. STUDENT REFERENCES:

A. Stockel, Martin W. Auto Service and Repair. South Holland, Illinois: The Goodheart-Willcox Company, Inc., 1969.

REFERENCES

Specific References

II. Agricultural Supplies and Services

A. Agricultural Chemicals

1. Agricultural Supply-Sales and Services Occupations, Ohio State University, Center for Vocational and Technical Education, Columbus, Ohio, 1965.

Module	4	Agricultural Salesmanship
Module	6	Business Procedures
Module	7	Feeds, Sales, and Service
Module	9	Fertilizer Sales and Service
Module	10	Agricultural Chemicals Sales and Service
Module	11	Petroleum and Petroleum Products

2. Farm Chemical Manual, The American Oil Company, Marketing Department, Chicago, Illinois.

3. Farming 75 Pesticides and Petroleum, The American Oil Company, Marketing Department, Chicago, Illinois.

4. Price, Musselman, and Hall. General Business for Everyday Living, McGraw-Hill, Inc., 1972.

5. DeBurn, Haines, Mulsbany, and Crabbe. General Business for Economic Understanding, South-Western Publishing Co, Cincinnati, Ohio, 1971.

6. Weyant, Hoover, and McClay. An Introduction to Agriculture Business and Industry, Interstate Printers and Publishers, Danville, Illinois, 1971.

7. Agricultural Supply and Service Series, Ohio State University, Agricultural Education Service, Center for Vocational and Technical Education, Columbus, Ohio, 1971

Agdex 900/60	Human Relations in Business
Agdex 920(a)	Business Money Management
Agdex 920(b)	Business Procedures and Records
Agdex 920(c)	Selling and Salesmanship
Agdex 920/40	Advertising and Promotion
Agdex 921	Feeds
Agdex 924	Agricultural Chemicals

(Each of the references listed above has a Teacher's Guide and Student Manual.)

8. Publications, Bureau of Sport Fisheries and Wildlife, 600 East Monroe Room 22, Springfield, Illinois.
313 Fundamentals of Rodent Proofing
316 Facts about Rats and Mice
317 Use of Single Dose Poisons

9. Pesticide Handbook, The American Oil Company, Chicago, Illinois, 1974.

10. Legal Aspects of Crop Spraying, Circular 990, University of Illinois Extension Service, Urbana, Illinois.

11. Calibrating and Maintaining Spray Equipment, Circular 837, University of Illinois Extension Service, Urbana, Illinois.

12. Safe Handling of Anhydrous Ammonia, Rural Accident Prevention Bulletin, National Safety Council, Farm Department, 425 N. Michigan Ave., Chicago, Illinois.

12a. Respiratory Protection in Agriculture, National Safety Council, Farm Department, 425 N. Michigan Ave., Chicago, Illinois.

13. Agricultural Chemicals - Herbicides, Curriculum Materials for Agricultural Education. Lesson 4--"Herbicide Application Equipment," Blacksburg, Virginia, Virginia Polytechnic Institute and State University, Cooperatuve Extension Service, 1970. Publication ETV 2-4.

B. Agricultural Feeds

14. Farm and Ranch Safety Guide, National Safety Council, 425 N. Michigan Ave., Chicago, Illinois.

15. Personal Protective Equipment for Agriculture, Rural Accident Prevention Bulletin, National Safety Council, 425 N. Michigan Ave., Chicago, Illinois.

16. Hearing Protection in Agriculture, Rural Accident Prevention Bulletin, National Safety Council, 425 N. Michigan Ave., Chicago, Illinois.

17. Fire Prevention on the Farm and Ranch, Rural Accident Prevention Bulletin, National Safety Council, 425 N. Michigan Ave., Chicago, Illinois.

18. Aldrich and Lang. Modern Corn Production, F and W Publishing Co., Cincinnati, Ohio, 1965.

19. Fundamentals of Machinery Operation, Agricultural Machinery Safety, Deere and Co., Moline, Illinois, 1974.

C. Agricultural Seeds

20. Scott, W. O. Hybrid Seed Corn Labels in 1971, University of Illinois, Urbana, Illinois.

21. Scott and Lang. Modern Soybean Production, F and W Publishing Co., Cincinnati, Ohio.

22. Illinois Agronomy Handbook, University of Illinois Cooperative Extension Service, Urbana, Illinois, 1974.

23. Corwin, Merle. Supervised Occupational Experience Manual, The Interstate Printers and Publishers, Danville, Illinois.

24. Twenty-Sixth Illinois Custom Spray Operators Training School, University of Illinois Cooperative Extension Service, 1974.

D. Agriculture Fertilizers

25. Pesticide Handbook, The American Oil Company, Chicago, Illinois, 1974.

26. McVickor, M. H. Using Commercial Fertilizer, The Interstate Printers and Publishers, Danville, Illinois, 1961, Second Edition.

27. The Fertilizer Handbook, National Plant Food Institute, 1700 K. Street, N. W. 20006, Washington, D.C., 1963.

E. Agricultural Supplies and Services, Other

28. Stockel, Martin W. Auto Service and Repair, The Goodheart-Wilcox Company, Inc., South Holland, Illinois, 1969.

29. Repair Instructions IV, Briggs and Stratton Corporation, Milwaukee, Wisconsin.

The following units are available from the Vocational Agriculture Service, 434 Mumford Hall, University of Illinois, Urbana, Illinois 61801.

30 V.A.S. 4050 Nitrates in Water Supplies, Field Crops, and Ruminant Nutrition

31. V.A.S. 4045 Handling and Using Agricultural Chemicals Safely

32. V.A.S. 6007 Agricultural Credit Instruments

33. V.A.S. 6010 Inventory Management and Control

34.	V.A.S. 6004	Agricultural Business Procedures
35.	V.A.S. 6005	The Use of the Cash Register
36.	V.A.S. 6008	Customer Credit Management in Agricultural Businesses
37.	V.A.S. 6003	Human Relations in Agricultural Business
38.	V.A.S. 6002	Salesmanship in Agricultural Business
39.	V.A.S. 4010a	Planning a Fertilizer Program
40.	V.A.S. 4003b	Testing Soils for Phosphorus
41.	V.A.S. 4006a	Soil Liming a Key to Better Farming
42.	V.A.S. 4005	Nature of Soil Acidity and Major Plant Nutrients
43.	V.A.S. 3014	Small Engines--Principals of Operation, Trouble Shooting, and Tune-Up
44.	V.A.S. 3019	Small Engines--Repair and Overhaul
45.	V.A.S. 3031	Tires for Farm Equipment
46.	V.A.S. 3024	The Storage Battery
47.	V.A.S. 3026	The Spark Plug in Operation, Selection, and Maintenance
48.	V.A.S. 3030	The Engine Cooling System

Selected References for More Information

A. Agricultural Cooperative Training - Agricultural Supplies and Services, University of Texas, Vocational Instructional Services.

B. Agricultural Supply - Sales and Service Occupation, Twelve Modules, Ohio State University, The Center for Research and Leadership Development in Vocational and Technical Education, 980 Kinnear Road, Columbus, Ohio 43212.

C. Career Preparation in Agricultural Supplies and Services, Ohio State University, Ohio Career Education and Curriculum Management Laboratory in Agriculture Education, Columbus, Ohio 43210, 1974.

D. Course of Study in Agricultural Occupations, Agricultural Sales, and Services, Agriculture Occupations Service, Vocational and Technical Education Division, 405 Centennial Building, Springfield, Illinois 62706.

E. Curriculum Guide in Agricultural Supplies and Services, Iowa State University, Department of Agricultural Education, Ames, Iowa 50010, 1973.

F. Job Analysis for Instructional Behavioral Objectives for the Grain, Feed, Seed, and Agriculture Chemicals Occupations, Utah State University, Agriculture Department, Logan, Utah, 1974.

G. Specialized Curriculum in Agricultural Sales and Service for Arizona, University of Arizona, Agricultural Education Department, Tucson, Arizona.

H. New Instructional Materials for Agricultural Education, Printed by Vocational Agriculture Service for American Vocation Association, Urbana, Illinois.

This publication is published annually by the Curriculum Materials Committee of the Agricultural Education Division of the American Vocational Association. Its purpose is to inform agricultural educators of current agricultural curriculum materials available.

I. Teaching Materials Catalog, Vocational Agricultural Service, University of Illinois, Urbana, Illinois.

This publication lists teaching materials available that are developed primarily for use in agriculture classes

at the secondary, post-secondary, and adult level.

J. Books for Agriculture, The Interstate Printers and Publishers, Danville, Illinois.

SCHOOL FACILITIES, EQUIPMENT, AND SUPPLIES

	Item	Source
1.	Up-to-date reference books	Various publishing companies
2.	Current agricultural magazines	Various publishing companies
3.	Slidefilms	Vocational Agriculture Service
4.	Agricultural releases	Vocational Agriculture Service
5.	Feed, fertilizer, chemical and seed tags	Local
6.	Crop seed samples	Vocational Agriculture Service and Local
7.	Weed mounts	Nasco
8.	Fertilizer samples	Local
9.	Sample herbicide containers	Local
10.	Moisture tester	
11.	Inventory forms	Vocational Agriculture Service
12.	Bill of lading forms	Local
13.	Cash flow forms	Vocational Agriculture Service
14.	Illinois sales tax rate chart	State Revenue Department
15.	Sales ticket samples	Local
16.	Sample purchase orders	Local
17.	Sample receiving records	Local
18.	Invoice samples	Local
19.	Cash register	School
20.	Adding machines	School
21.	Electric calculators	School
22.	Overhead projector	School
23.	Tape recorder	School
24.	Slidefilm projector	School

AUDIO VISUAL SOURCES AND MATERIALS

Source: Vocational Agriculture Service, 434 Mumford Hall, University of Illinois, Urbana, Illinois 61801.

II. Agricultural Supplies and Services

A. Agricultural Chemicals

Slidefilms

1 av. Identification of Weeds, Part 1 V.A.S. 791
2 av. Identification of Weeds, Part 2 V.A.S. 792
3 av. Advertising Your Product V.A.S. 387
4 av. Displaying Merchandise V.A.S. 386
5 av. Calibrating Field Sprayers V.A.S. 442
6 av. Using Pre-emergence Herbicides V.A.S. 797
7 av. Points about Pesticides and Facts about Pesticides Color filmstrips with recordings. Order from Manufacturing Chemist Association, Inc., 1825 Connecticut Avenue, N.W. Washington, D.C.

Film

8 av. Safe Use of Pesticides Color, 1963, 16mm, (21 min.) U.S.D.A. Order from state film library.

B. Agricultural Feeds

C. Agricultural Seeds

Slidefilms

9 av. Human Relations in Agriculture Business V.A.S. 392
10 av. Advertising Your Product V.A.S. 387
11 av. Displaying Merchandise V.A.S. 386
12 av. Salesmanship in Agribusiness V.A.S. 391
13 av. Producing Hybrid Seed Corn V.A.S. 730A
14 av. Seed Quality V.A.S. 796
15 av. Product Knowledge V.A.S. 383
16 av. Product Competition V.A.S. 384

D. Agricultural Fertilizer

Slidefilms

17 av. Calibrating a Granular Applicator V.A.S. 443
18 av. Collecting and Preparing Soil Samples for Testing V.A.S. 703-64

Additional audio visual materials can be obtained from:

New Instructional Materials for Agricultural Education. Urbana, Illinois. Printed by Vocational Agriculture Service for American Vocational Association.

TEACHERS' COMPETENCIES AND TRAINING AVAILABLE

Several opportunities exist for instructors in agricultural supplies and services to upgrade themselves and retrain to keep up with the dynamic field in which they work. Following is a partial listing of ways for these teachers to increase their competencies:

1. Attend inservice workshops held during the annual Agricultural Occupations Teacher Conference in June.

2. Attend state wide meetings such as:
   a. Agronomy Day at state universities
   b. Chemical dealers' conferences
   c. Feed and grain dealers' conferences
   d. Custom spray operator schools

3. Attend area and state meetings in conjunction with the Cooperative Extension Service.

4. Enroll in university course work in either on-campus or off-campus workshops. Suggestions for course work and/or job training include:
   a. Handling feed, chemiclas, and fertilizers
   b. Working with business procedures
   c. Working in an agricultural supply store